

AUBURN UNIVERSITY



Fully accredited by the
Southern Association of Colleges
and Schools

ALABAMA'S
LAND-GRANT
UNIVERSITY

AUBURN, ALABAMA 36830

1968-69

CATALOG NUMBER

Cover by:

MARY STODDARD

Auburn University graduate
in Visual Design

CONTENTS

University Calendar	2-3
Board of Trustees	4
Administrative Council	5
General Information	6
School of Agriculture	55
School of Architecture And Fine Arts	69
School of Arts and Sciences	82
School of Business	96
School of Chemistry	99
School of Education	104
School of Engineering	124
School of Home Economics	140
School of Pharmacy	145
School of Veterinary Medicine	149
The Graduate School	153
Reserve Officers Training Corps	156
Description of Courses by Departments	167
Faculty and Staff	306
Enrollment Statistics	369
General Index	375

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VOLUME 63

APRIL, 1968

NUMBER 4

1968

UNIVERSITY CALENDAR

JULY

S	M	T	W	T	F	S
1	2	3	4	5	6	
7	8	9	10	11	12	13
14	15	16	17	18	19	20
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AUGUST

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SEPTEMBER

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OCTOBER

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1968—Summer Quarter (46 class days)

- May 20, Monday Last day for completing applications
 June 10-11, Monday and Tuesday Final registration
 June 12, Wednesday Classes begin
 June 12-15, Wednesday through Saturday Special examination period
 July 4 & 5, Thursday and Friday Independence Day, Holidays
 July 13, Saturday Final examinations for first term
 July 15, Monday Registration for second term
 **July 15-25 Registration for Fall Quarter
 July 16, Tuesday Mid-quarter
 August 16, Friday Classwork ends
 August 17, Saturday Final examinations for second term
 August 19-21, Monday through Wednesday Final examinations for quarter
 August 22, Thursday Graduation, 4:00 p.m.

1968—Fall Quarter (50½ days)

- August 28, Wednesday Last day for completing applications
 September 18, Wednesday Freshmen report
 September 18-20, Wednesday through Friday Final registration
 September 23, Monday Classes begin
 September 23-26, Monday through Thursday Special examination period
 October 22, Tuesday General Faculty Meeting
 October 25, Friday Mid-quarter
 **October 28-November 7 Registration for Winter Quarter
 November 27, Wednesday (noon) through December 1, Sunday Thanksgiving Holiday
 December 4, Wednesday Classwork ends
 December 6-11, Friday through Wednesday Final examinations
 December 12, Thursday Graduation, 2:30 p.m.

1969—Winter Quarter (45 class days)

- December 12, Thursday Last day for completing applications
 January 2-3, Thursday and Friday Final registration

UNIVERSITY CALENDAR

January 6, Monday	Classes begin
January 6-9, Monday through Thursday	Special examination period
**February 3-13	Registration for Spring Quarter
February 7, Friday	Mid-quarter
March 8-12, Saturday through Wednesday	Final examinations
March 13, Thursday	Graduation, 2:30 p.m.

1969

JANUARY

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JUNE

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29	30						

1969—*Summer Quarter (48 class days)

May 20, Tuesday	Last day for completing applications
June 10-11, Tuesday and Wednesday	Final registration
June 12, Thursday	Classes begin
June 12-17, Thursday through Tuesday	Special examination period
July 4, Friday	Independence Day, Holiday
July 16, Wednesday	Mid-quarter
**July 14-24	Registration for Fall Quarter
August 7, Thursday	Classwork ends for term
August 8-9, Friday through Saturday	Final examinations for term
August 19, Tuesday	Classwork ends for quarter courses
August 21-22, Wednesday through Friday	Final examinations for quarter courses
August 23, Saturday	Graduation, 2:30 p.m.

* Subject to final approval prior to 1969-70 catalog printing.
 ** Dates subject to change pending revision of registration procedures. Each academic school will designate registration dates within these periods.

The Auburn Board of Trustees

Under the organic and statutory laws of Alabama, Auburn University is governed by a Board of Trustees consisting of one member from each congressional district, as these districts were constituted on January 1, 1961, an extra member from the congressional district in which the institution is located, and the Governor and State Superintendent of Education, who are ex-officio members. The Governor is chairman. Members of the Board of Trustees are appointed by the Governor by and with the advice and consent of the State Senate and hold office for terms of twelve years. Members of the board receive no compensation. Trustees serve until reappointed or their successors are named.

The Board of Trustees places administrative authority and responsibility in the hands of an administrative officer at Auburn University. The institution is grouped for administrative purposes into divisions, schools, and departments.

Members of the Board

*Her Excellency, LURLEEN B. WALLACE, Governor, President (Ex-officio) Montgomery
ERNEST STONE, State Superintendent of Education (Ex-officio) Montgomery*

Term Expires 1971

Name	District	Home
R. C. BAMBERG	Sixth	Uniontown
REDUS COLLIER	Eighth	Decatur
JOHN W. OVERTON	Second	Montgomery

Term Expires 1975

JOHN PACE, III	First	Mobile
SIM A. THOMAS	Third	Eufaula
ROBERTS H. BROWN	Third	Opelika
FRANK P. SAMFORD	Ninth	Birmingham

Term Expires 1979

*E. L. WYNN	Fourth	Ashland
THOMAS E. MARTIN	Fifth	Guntersville
WALSTON HESTER	Seventh	Russellville

* Term expired in 1967. Will serve until reappointed or replaced.

FIRST DISTRICT COUNTIES: Choctaw, Clarke, Marengo, Mobile, Monroe, Washington and Wilcox.

SECOND DISTRICT COUNTIES: Baldwin, Butler, Conecuh, Covington, Crenshaw, Escambia, Lowndes, Montgomery and Pike.

THIRD DISTRICT COUNTIES: Barbour, Bullock, Coffee, Dale, Geneva, Henry, Houston, Lee, Macon and Russell.

FOURTH DISTRICT COUNTIES: Autauga, Calhoun, Clay, Coosa, Dallas, Elmore, St. Clair and Talladega.

FIFTH DISTRICT COUNTIES: Chambers, Cherokee, Cleburne, DeKalb, Etowah, Marshall, Randolph and Tallapoosa.

SIXTH DISTRICT COUNTIES: Bibb, Chilton, Greene, Hale, Perry, Shelby, Sumter and Tuscaloosa.

SEVENTH DISTRICT COUNTIES: Blount, Cullman, Fayette, Franklin, Lamar, Marion, Pickens, Walker and Winston.

EIGHTH DISTRICT COUNTIES: Colbert, Jackson, Lauderdale, Lawrence, Limestone, Madison and Morgan.

NINTH DISTRICT COUNTY: Jefferson.

Administrative Council of the University

HARRY M. PHILPOTT, A.B., PH.D., D.D., LL.D.
President

WILFORD S. BAILEY, D.V.M., M.S., Sc.D.
Vice President for Academic Affairs

BEN T. LANHAM, JR., B.S., M.S., PH.D.
Vice President for Research

FRED R. ROBERTSON, B.S., M.S., DR. P.A.
Vice President for Extension

H. FLOYD VALLERY, B.A., M.A., ED.D.
Assistant to the President

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Dean of Women

L. E. FUNCHESS, B.S., M.S.
Director of Buildings & Grounds

JAMES E. FOY, A.B., M.A.
Dean, Student Affairs

*MICHEL C. HUNTLEY, B.A., M.A., LL.D., LITT.D.
Dean of Faculties

WILLIAM T. INGRAM
Business Manager

**T. D. LITTLETON, B.S., M.A., PH.D.
Dean of Undergraduate Studies

W. V. PARKER, A.B., M.A., PH.D.
Dean, Graduate School

JOSEPH B. SARVER, B.S.
Director of Development

EDWIN V. SMITH, B.S., M.S., PH.D.
Director of Agricultural Experiment Station System
Dean, School of Agriculture

WILBUR A. TINCHER, A.B., M.A., ED.D.
Director of Educational Services

J. HERBERT WHITE, B.S.
Director of University Relations

^{*} Retired as of June 30, 1968.

^{**} Assumed duties as of July 1, 1968.

Contents

GENERAL INFORMATION SECTION

THE UNIVERSITY.....	7
History.....	7
Purposes.....	7
Functions.....	8
The Academic Program.....	10
Fields of Study.....	10
The Campus and Buildings.....	12
Library Facilities.....	13
Map of Campus.....	14-15
Sources of Revenue.....	16
 FOR PROSPECTIVE STUDENTS.....	18
Admissions.....	18
Living Accommodations.....	23
Fees and Charges.....	29
Financial Aid.....	32
Student Services.....	34
Student Activities.....	37
Special Programs.....	42
 UNIVERSITY REGULATIONS.....	44
Academic Regulations.....	44
Special Regulations.....	53

The University

History

Auburn University was chartered February 1, 1856, as the Methodist-sponsored East Alabama Male College, and the formal opening took place October 1, 1859. The Civil War interrupted the college's growth in 1861, and except for the preparatory department, the institution suspended operation, reopening in 1866.

Beset with financial problems, the college was presented to the State of Alabama by the Methodist Church on February 26, 1872. Having accepted the Morrill or Land-Grant College Act of 1862 in 1866, the Alabama Legislature received the gift of the campus and facilities and established the Alabama Agricultural and Mechanical College at Auburn. This was the first land-grant college in the South established separate from the state university.

Auburn first admitted women students in 1892.

Following an earlier action of the Board of Trustees, the Legislature, in 1899, changed the name of the institution to The Alabama Polytechnic Institute, justifying the change on the college's broadened program of teaching the sciences and arts as well as branches related to agriculture and the mechanic arts.

Auburn has experienced its greatest growth and development since World War II with over three-fourths of the 13,236 students enrolled currently in the Schools of Education, Engineering, Arts and Sciences, Business, and the Graduate School.

From the beginning, the name of the city — drawn from Goldsmith's immortal line, "Auburn, loveliest village of the plain" — has been used to designate the institution. Recognizing this fact and the expanded academic program, the Alabama Legislature changed the name of the institution to Auburn University on January 1, 1960.

One of the largest institutions in the South today, Auburn University has increased its enrollment from 80 in 1859 to 13,236 in the fall of 1967. The original plant consisted of a single building and 16 acres. Expansion has resulted in a multi-million dollar plant comprising 56 main buildings and 1,871 acres on the main campus. The University's Agricultural Experiment Station owns an additional 16,814 acres of land at substations and units over the state. Through its divisions of Instruction, Research and Extension, Auburn University touches the life of nearly every Alabama family.

The City of Auburn is in Lee County. Incorporated in 1838, it is 60 miles east of Montgomery, 120 miles southeast of Birmingham, and 125 miles southwest of Atlanta, Ga. It sits astride the junction of the Piedmont plateau and the Coastal plains at an elevation of 732 feet and enjoys moderate temperatures throughout the year. The city has an area of about 20 square miles and a population of approximately 20,000.

Purposes of Auburn University

To maintain a community of learning where knowledge may be preserved, disseminated, and increased. (This is the fundamental purpose of all univer-

sities. To the extent that it fulfills this basic purpose of a university, Auburn University will fulfill its several particular purposes which are listed below.)

To provide the opportunity to all qualified young people of the State, regardless of their economic or social background, for a liberal and practical education.

To provide the State, the region, and the nation with educated young people who have the disciplined minds, the knowledge, and the skills to contribute needed leadership and services to society and who will help perpetuate the moral and political values upon which our society is based.

To conduct a broad program of public and private research, basic and applied, for the general increase of human knowledge, for the benefit of society in meeting its scientific, economic and social problems, and for the stimulation of the faculty and students in their quest for knowledge.

To carry knowledge and its benefits to the people of the State by means of extension programs and the use of the mass media of communications in order to help all citizens improve their technical and cultural capabilities.

To conserve our cultural heritage through support of scholarly and creative work in the humanities, social sciences, and the arts so that the University may serve both students and citizens of the State as a focal center where the cultural traditions of our civilization are kept alive and transmitted to the future.

To engage constantly in an examination of the particular objectives, goals and programs of the University in the light of new knowledge and of changing social conditions; and as a part of this constant re-examination, to seek ever more efficient and economical means of fulfilling the University's purposes.

Functions

The official seal of Auburn University carries three words, Instruction, Research, and Extension, indicating the three functional areas through which the institution operates as the State's Land-Grant University.

Through INSTRUCTION, the University by the presentation of knowledge and its challenges attempts to develop the mind of the student and thus prepare him for a useful and satisfying life.

Through RESEARCH, basic and applied, it seeks to enlarge and verify the major bodies of knowledge and to find solutions to problems confronting business, industrial, agricultural, governmental and professional groups.

Through EXTENSION, it conveys to the people of the State the findings of research and its application to the improvement of working and living.

Instruction

There are 10 undergraduate academic schools and a School of Graduate Studies incorporated in Auburn University, including 63 departments for specialized study. Baccalaureate, masters and doctoral degrees are offered and awarded on a basis of high standards. A strong graduate program strengthens undergraduate areas and all research programs. Military instruction is offered through programs in Military, Naval and Air Science.

The University's instructional purpose is twofold: to stimulate the student to reach his full potential as a human being through a respect for intellectual inquiry and an understanding of the cultural tradition of which he is a part; and to provide him with the knowledge and skills that will allow him to make his way successfully in a demanding and practical world.

Research

The land-grant college upon its inception accepted responsibility for discovering and organizing knowledge in agriculture and related fields largely because of lack of subject matter for instruction.

The purposes of research suggested in the Hatch Act of 1887 provided for establishment and support of the Agricultural Experiment Station. Its objectives were to conduct research bearing on the agricultural industry, to aid in acquiring information on subjects connected with agriculture, and to promote scientific investigation into the principles and applications of agriculture.

In 1929 the Engineering Experiment Station was established to assist industries in the State to improve manufacturing processes and to study undeveloped natural resources and methods by which they may be converted into marketable products. Its services are available to industry, governmental agencies, and to citizens of the State.

In 1944 a Research Council was formed to further research, to discover and develop research talent, to cooperate with all agencies for the betterment of the South, to foster and encourage learning in natural science, social science, the humanities, agriculture and engineering, and to promote liberal and practical education in the several pursuits of life.

The Water Resources Research Institute was established in 1963 to stimulate and sponsor water resources research and the training of scientists in water and other resources as they affect water.

In 1967 the Office of Contract and Grant Development was established within the Office of the Vice President for Research to coordinate and service University policies and procedures relating to extramural programs in instruction, research, and extension, and to handle the activities formerly handled by the Auburn Research Foundation. Auburn's fastest expanding research area is sponsored research — contract and grant research supported by Federal, State, Foundation, and private agencies in all units of the institution.

The continuing objectives of the University are to further the frontiers of knowledge in all areas and to discover new and better ways of doing things through broadened programs of research.

Every academic school on the Auburn campus is involved in research. Auburn's faculty and graduate students are actively increasing man's understanding of man and the world in which he lives. In the sciences, the quest is for new knowledge. In the arts, humanities, and social sciences, the search is for new meanings.

While University interests are in applying scientific study and findings to current problems, equal interests exist in preparing scholars, thinkers, and workers for the future, and leaders competent in the use of the fruits of research.

The growth and development of University research parallels that of graduate enrollment. Individual research by faculty members and graduate students is encouraged and extensive programs of basic and applied research are continually expanding throughout the institution.

Extension

Extending the results of research and instruction and countless other services directly to the people of the State in the cities and on the farms; in organized classes and in the home; by lecture, demonstration, publications and

otherwise, has long been a major responsibility of the institution. The land-grant college has gone into the far corners of the State to serve people and to give them the benefit of knowledge acquired through instruction, in the laboratories, and on the farms.

Since the passage of the Smith-Lever Act in 1914, employees of the Co-operative Extension Service have carried specific and useful agricultural and home economics information to people on the farms and in communities throughout the state. Results have been higher crop and livestock production, improved soils, diversification, better marketing facilities, more machinery, and better homes.

The Engineering Extension Service was established in 1937 to provide greater opportunities for the people, businesses, and industries of the State to use the resources and facilities of the University. Programs of this Service include technical short courses, conferences, and the co-operative education program.

Auburn University is keenly aware of its responsibilities in all areas of Extension and continuing education. Extension programs are conducted by the Schools of Architecture and Fine Arts, Business, Education, Engineering, Pharmacy, and by the School of Veterinary Medicine. In addition, Educational Television presents instructional and informational programs, and the Ralph Brown Draughon Library works cooperatively with city, county and regional libraries to make literary materials accessible to the people.

Extension programs are designed to enable the University to provide a wide variety of educational services throughout Alabama to farms, homes, industries, communities and municipalities. A major goal of Auburn is to relate more adequately the competencies of the University to the needs of people and communities throughout the State.

The Academic Program

Fields of Study

Auburn University offers work in many fields. The student has an opportunity for specialization and the pursuit of particular interests in the several Schools including the Graduate School.

For instructional purposes, the University is organized into the following Schools: Agriculture, Architecture and Fine Arts, Arts and Sciences, Business, Chemistry, Education, Engineering, Home Economics, Pharmacy, Veterinary Medicine, and the Graduate School.

Instruction is given in each School through four quarters of approximately 11 weeks each.

Resident instruction in the University is offered through Schools and Departments as indicated below. Regular curricula offered and degrees conferred by the several Schools are also listed.

School of Agriculture, includes the Departments of Agricultural Economics, Agricultural Engineering, Agronomy and Soils, Animal Science, Botany and Plant Pathology, Dairy Science, Forestry, Horticulture, Poultry Science, and Zoology-Entomology. Curricula offered are: *Agricultural Science, Agricultural Business and Economics, Agricultural Engineering, Biological Sciences, Food Science, Forest Management, Ornamental Horticulture and Wood Technology*. Within each curriculum students are permitted to major in line with their special interests.

Degrees: Bachelor of Science in Agriculture, Agricultural Business and Economics, Agricultural Engineering, Biological Sciences (Botany, Entomology, Fisheries Management, Wildlife Management, Zoology), Food Science, Forestry, Ornamental Horticulture, Wood Technology.

School of Architecture and Fine Arts, includes the Departments of Architecture, Art, Building Technology, Drama, and Music. Curricula offered are: *Architecture, Building Construction, Drama, Fine Arts, Industrial Design, Interior Design, Music (Majors in Applied Music, Church Organ Music, Music History and Literature, Theory and Composition), and Visual Design.*

Degrees: Bachelor of Architecture, Arts, Building Construction, Fine Arts, Industrial Design, Interior Design, Music.

School of Arts and Sciences, includes the Departments of English, Foreign Languages, Geology, History, Mathematics, Philosophy, Political Science, Physics, Psychology, Sociology, and Speech. Curricula offered are: *The General Curriculum (Majors in Humanities, and Natural and Social Sciences), Pre-Professional (Pre-Law, Pre-Dentistry, Pre-Medicine, and Pre-Veterinary Medicine), and Special Scientific (Geology, Mathematics, Physics, Applied Physics, and Psychology).*

Degrees: Bachelor of Arts and Bachelor of Science.

School of Business.

Degrees: Bachelor of Business Administration and Bachelor of Secretarial Administration.

School of Chemistry, includes the Departments of Chemistry, Chemical Engineering, and Laboratory Technology. Curricula offered are: *Chemistry, Chemical Engineering, and Laboratory Technology.*

Degrees: Bachelor of Science in Chemistry, Chemical Engineering, Laboratory Technology, Medical Technology.

School of Education, includes the Departments of Elementary Education; Foundations of Education; Secondary Education; Administration, Supervision, and Guidance; Health, Physical Education and Recreation; Vocational, Technical and Practical Arts Education. Undergraduate curricula offered are: *Elementary Education, Secondary Education (majors or minors in Art; Business Education; Drama; English; Health, Physical Education and Recreation; Vocational Home Economics; Mathematics; Mental Retardation; Modern Languages; Music; School Library Science; Science; Social Science; Speech; and Speech Correction); Vocational, Technical, and Practical Arts Education (majors in Agricultural Education, Basic Vocational Education, Distributive Education, and Trades and Industrial Education).*

Degrees: Bachelor of Science in Education.

School of Engineering, includes the Departments of Pre-Engineering, Aerospace Engineering, Civil Engineering, Electrical Engineering, Engineering Graphics, Industrial Laboratories, Industrial Engineering, Mechanical Engineering, Textile Engineering. This School offers curricula in *Aerospace Engineering, Aviation Management, Civil Engineering, Electrical Engineering, Industrial Engineering, Mechanical Engineering, Metallurgical Engineering, Textile Chemistry, Textile Engineering, and Textile Management.*

Degrees: Bachelor of Aerospace Engineering, Aviation Management, Civil Engineering, Electrical Engineering, Industrial Engineering, Mechanical Engineering, Metallurgical Engineering, Textile Chemistry, Textile Engineering, and Textile Management.

School of Home Economics, includes the Departments of Clothing and Textiles, Family Life and Early Childhood Education, Foods and Nutrition, and Home Management and Family Economics. Curricula offered are: *Home Economics (majors in Clothing and Textiles, Foods and Nutrition, Home Management and Family Economics, Family Life and Early Childhood Education, Institutional Food Management), and Pre-Nursing Science.*

Degrees: Bachelor of Science in Home Economics (Clothing and Textiles, Foods and Nutrition, Home Management and Family Economics, Family Life and Early Childhood Education, Institutional Food Management).

School of Pharmacy, includes the Departments of Pharmacy, Pharmaceutical Chemistry, Pharmacology, Pharmacognosy, Pharmacy Administration, and offers a curriculum in *Pharmacy*.

Degree: Bachelor of Science in Pharmacy.

School of Veterinary Medicine, includes the Departments of Anatomy and Histology, Microbiology, Pathology and Parasitology, Physiology and Pharmacology, Large Animal Surgery and Medicine, and Small Animal Surgery and Medicine, and offers a curriculum in *Veterinary Medicine*.

Degree: Doctor of Veterinary Medicine.

The Graduate School, administers programs leading to the degrees of Master of Arts, Master of Science, Master of Agriculture, Master of Fine Arts, Master of Building Construction, Master of Business, Master of Education, and Master of Home Economics. Beyond the Master's degree, programs are offered leading to the degrees of Specialist in Education, Doctor of Education, and Doctor of Philosophy. The Master of Arts in College Teaching is the newest graduate degree.

Reserve Officers Training Corps, includes the Department of Air Force Aerospace Studies with training in Aerospace Studies, the Department of Military Science with training in Military Science, and the Department of Naval Science with training in Naval Science.

The Campus and Buildings

Located in the Auburn campus are 56 major classroom, research, and service buildings. There are 20 women's dormitories; three major men's dormitories, an athletic dormitory and 336 apartments for married students in the Caroline Draughon Village. The main campus consists of 1,871 acres, of which 420 are intensively maintained.

In addition, the Agricultural Experiment Station owns 16,814 acres of land at the 10 substations, five experiment fields, four forestry units, the plant breeding unit, the ornamental field station, and the main station at Auburn.

Considerable construction has been accomplished during the past five years, including a \$2.5 million Library, a Physical Science Center and a Home Economics building. The old library building, now Mary E. Martin Hall, has been renovated, air-conditioned and converted into an administrative building.

Through the Auburn University Development Program, a new organization enabling Auburn alumni and friends to support the University, funds for the construction of a Nuclear Science Center were made available. A \$1,017,000 Nuclear Science Center is now in use.

Direction of the Auburn University Development Program is under a 55-member board known as the Auburn University Development Council. All gifts obtained through the Development Program are received by the Auburn

University Foundation, a corporation created expressly for that purpose and administered by a seven-man board of directors.

A map of the campus listing the buildings and their function is shown on pages 14 and 15.

Experiment Station Properties

The Agricultural Experiment Station System of Auburn University owns 16,814 acres of land at the ten substations, five experiment fields, four forestry units, plant breeding unit, ornamental horticulture field station, foundation seed stocks farm, and the main station at Auburn. Locations and acreages of the above mentioned units are as follows:

Main Station	Auburn	Lee	4,453
Substations:			
Black Belt	Marion Junction	Dallas	1,116
Chilton Area Horticulture	Clanton	Chilton	161
Gulf Coast	Fairhope	Baldwin	800
Lower Coastal Plains	Camden	Wilcox	2,755
North Alabama Horticulture	Cullman	Cullman	160
Piedmont	Camp Hill	Tallapoosa	1,409
Sand Mountain	Crossville	DeKalb	536
Tennessee Valley	Belle Mina	Limestone	760
Upper Coastal Plains	Winfield	Marion and Fayette	735
Wiregrass	Headland	Henry	532
Experiment Fields:			
Alexandria	Alexandria	Calhoun	90
Brewton	Brewton	Escambia	80
Monroeville	Monroeville	Monroe	79
Prattville	Prattville	Autauga	80
Tuskegee	Tuskegee	Macon	237
Plant Breeding Unit	Tallassee	Elmore	664
Ornamental Horticulture Field Station			
Foundation Seed Stocks Farm	Spring Hill	Mobile	15
	Thorsby	Chilton	180

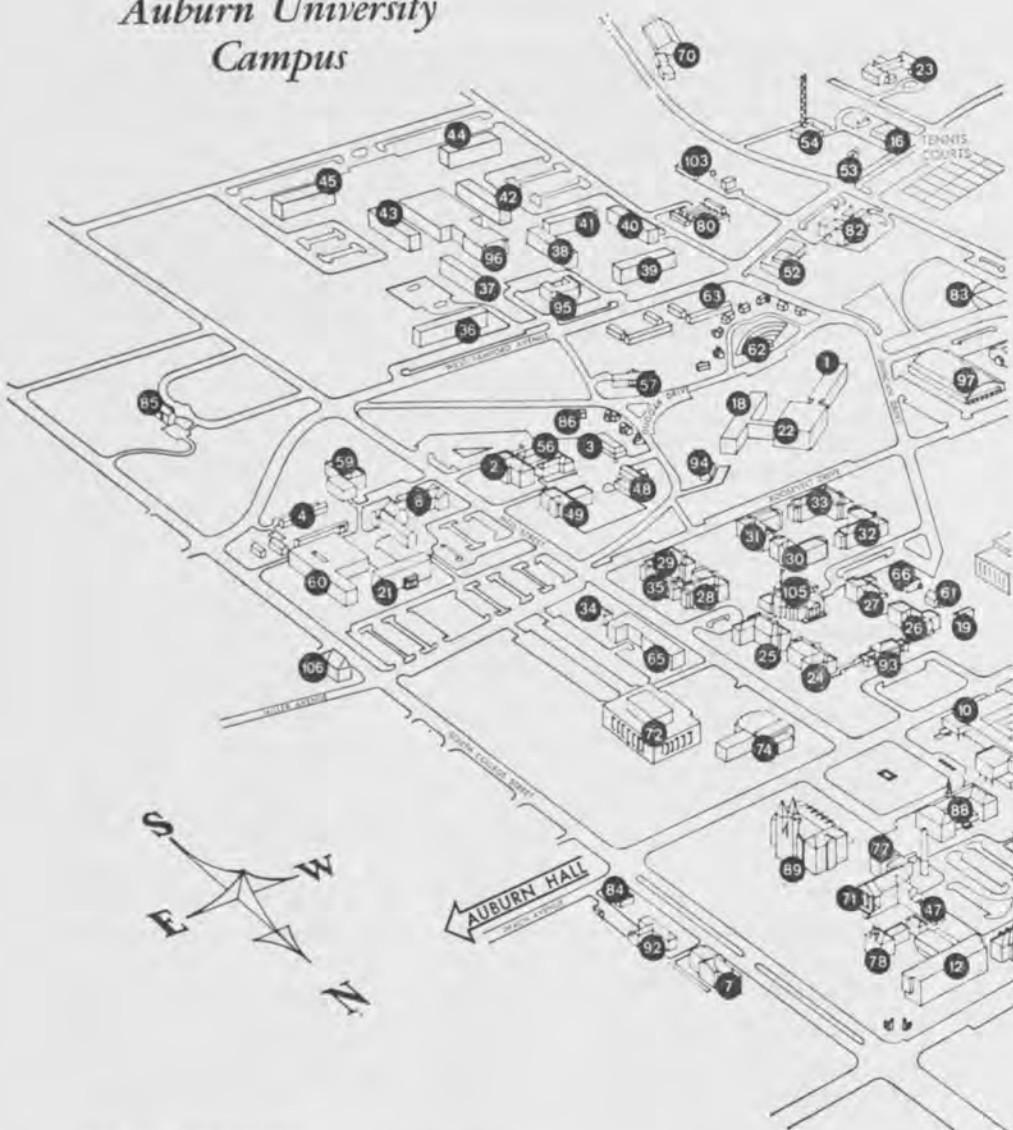
In addition to the above, there are 1,972 acres at the Forestry Units in Autauga, Barbour, Coosa, and Fayette Counties.

Library Facilities

The Ralph Brown Draughon Library, opened in January, 1963, has a study capacity for 2,000 students and room for one million volumes. Spacious reading rooms are separated by glass walls, giving a panoramic view of each floor, with fluorescent lights, contemporary furniture, and open book stacks aiding the student in his study.

The Library also contains 98 closed carrels for the use of faculty members and graduate students engaged in library research, seven rooms for listening to recordings and a projection room with 108 theatre seats where special educa-

Auburn University Campus

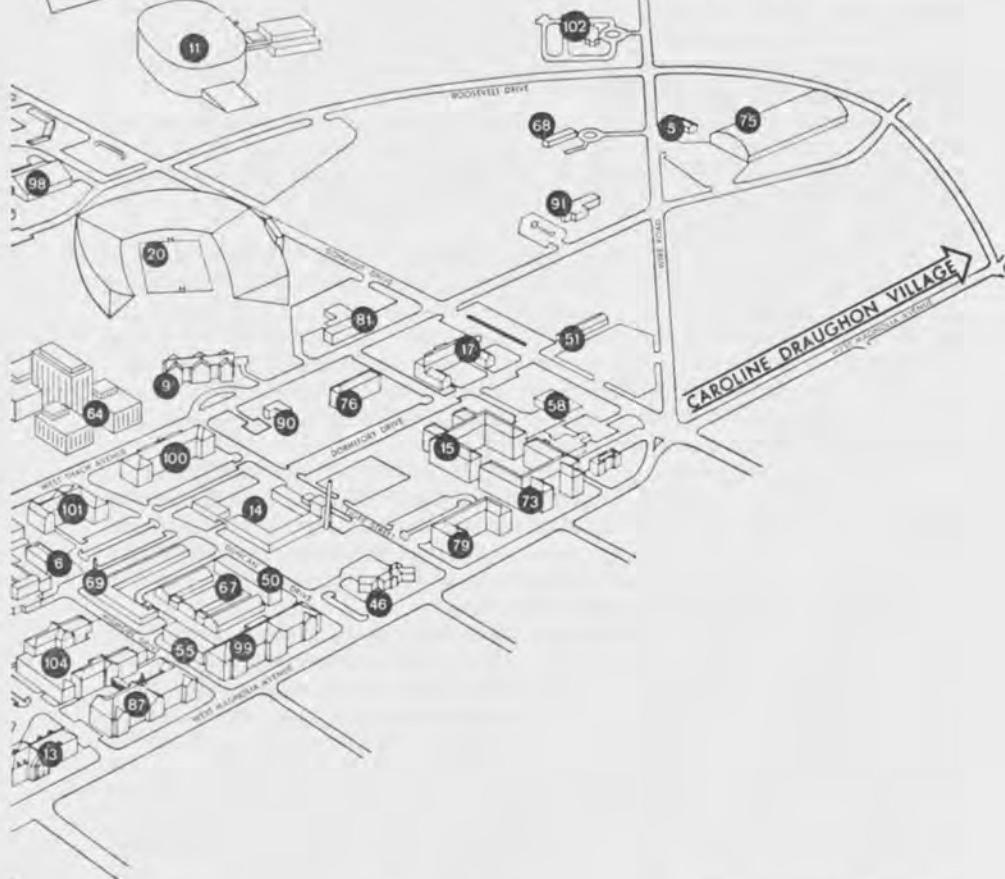


KEY TO BUILDINGS

- | | | |
|------------------------------------|---------------------------|--------------------------------|
| 1. Allison Physics Lab | 16. Burke Lab | 31. Dorm 8, Lupton Hall |
| 2. Agricultural Engineering | 17. Cary Hall | 32. Dorm 9, Keller Hall |
| 3. Agricultural Engineering Garage | 18. Chemistry Bldg. | 33. Dorm 10, Owen Hall |
| 4. Agricultural Greenhouses | 19. Child Study Labs | 34. Mel Hall (Arts & Sciences) |
| 5. Air Force Supply | 20. Cliff Hare Stadium | 35. Dorm 12, Gatchell Hall |
| 6. Alumni Gymnasium | 21. Comer Hall | 36. Dorm A, Hollifield Hall |
| 7. Alumni Hall | 22. Commons | 37. Dorm B, Annie Duncan Hall |
| 8. Animal Sciences Bldg. | 23. Dairy Barns | 38. Dorm C, Toomer Hall |
| 9. Athletic Field House | 24. Dorm 1, Harper Hall | 39. Dorm D, Dobbs Hall |
| 10. Auburn Union | 25. Dorm 2, K. Broun Hall | 40. Dorm E, Dunn Hall |
| 11. AU Memorial Coliseum | 26. Dorm 3, Little Hall | 41. Dorm F, Graves Hall |
| 12. Biggin Hall | 27. Dorm 4, Teague Hall | 42. Dorm G, Dowell Hall |
| 13. Broun Hall | 28. Dorm 5, Dowdell Hall | 43. Dorm H, Knapp Hall |
| 14. B&G HO | 29. Dorm 6, Glenn Hall | 44. Dorm K, Sasnett Hall |
| 15. Bullard Hall | 30. Dorm 7, Lane Hall | 45. Dorm J, Boyd Hall |

WEST SANFORD AVENUE

ANIMAL DISEASE RESEARCH
LARGE ANIMAL CLINIC
STATE TOXICOLOGY LAB



46. Drake Infirmary
47. Drama Shop
48. Duncan Extension Hall
49. Duncan Hall (Ext. Svc. HQ)
50. Dunstan Hall
51. Duplicating Svc.
52. E. Leach Nuclear Science Ctr.
53. Ed. TV Offices
54. Ed. TV Studio
55. Electrical Lab
56. Farm Machinery Annex
57. Fish Culture Lab
58. Food Svc. Bldg.
59. Forestry Bldg.
60. Funchess Hall
61. Gistant Home Management
62. Graves Amphitheatre
63. Graves Apts.
64. Haley Center
65. Home Ec. Bldg.
66. Home Management Duplex
67. Industrial Engineering Shops
68. Isolation Disease Lab
69. "L" Bldg.
70. Lambert Meats Lab, Abattoir
71. Langdon Hall
72. Library, Ralph B. Draughon
73. Magnolia Hall
74. Mary E. Martin Hall
75. Military Hangar
76. Miller Hall
77. Music Annex
78. Music Bldg.
79. Noble Hall
80. Ornamental Horticulture
81. Physiology Bldg.
82. Sewell Hall
83. Plainsman Park
84. Players Theatre
85. President's Home
86. Radiological Safety Lab
87. Ramsay Hall
88. Ross Lab
89. Sanford Hall
90. Serum Plant
91. Small Animal Clinic
92. Smith Hall
93. Social Center
94. Soil Conservation
95. (South) Burton Admin. Bldg.
96. (South) Terrell Dining Hall
97. Sports Arena
98. Student Activities Bldg.
99. Textile Bldg.
100. Thach Hall
101. Tichenor Hall
102. USDA Animal Disease Lab
103. USDA Soil Tillage Lab
104. Wilmore Engineering Labs
105. Women's (Main) Dining Hall
106. Y. Art Annex

tional films may be viewed. The building is completely air-conditioned and has public elevators for use of patrons.

On July 1, 1967, the Library contained 504,949 volumes and more than 500,000 publications of federal and state governments. Materials issued by the various branches of the federal government, the Atomic Energy Commission, and the National Aeronautics and Space Administration and others are received on depository account. The collections in microphotography reproduction are being increased rapidly. Each floor or division has one or more special reading rooms for various microforms.

Agricultural and engineering experiment station bulletins and others are available. Quantities of books, dissertations, and documents are received on microfilm and microcards, as well as important newspapers and periodicals. More than 8,600 serials are being received currently; back files are available for a large portion of these titles.

A number of special collections are maintained by the Library. Some of these are the George Petrie Memorial Collection, presented by Miss Kate Lane; the Flagg Architecture Library, given by the Alabama Institute of Architects; the Hodson Collection on the History of Agriculture, presented by Mr. Edgar A. Hodson, Arkansas State Agronomist; the personal library of the late Mrs. B. B. Ross; an excellent sports collection, donated by Mr. C. W. (Bill) Streit; and many others. The Library also contains a collection of documents and publications in Alabama history and government.

Borrowing privileges are extended to the members of the administrative, research, instruction, and extension staffs of the University; to University alumni and to governmental departments and agencies located in Auburn. Loan privileges are also extended to all citizens of the State by inter-library loan requests through their local libraries; to all students in residence; and to members of the Auburn Research Foundation.

Books for reserve use by the various classes are located in the Reserve Book Department on the first level. There is also a large reserve reading room, a general reading room, the Special Collections Department, a projection room and a browsing room on this floor. Popular and contemporary books, magazines and newspapers are available here. Housed on the second floor are the Humanities Division, the bibliography area, the Technical Services area, the Circulation Division, and the Administrative Offices. The third floor is devoted entirely to the Social Sciences, and the fourth floor to science and technology.

Branch libraries on campus are the Architecture Library and the Pharmacy-Veterinary Library. Hours of service vary in the branch libraries.

The Department of Archives, located on the first floor, accumulates and makes available the University archives, manuscripts, letters, notebooks, articles, papers and other materials of or by the various staffs of the institution; also similar materials dealing with the State of Alabama and the South in general. The Department is not open all hours the Library is open; patrons and visitors may call the Department for information.

Sources of Revenue

Auburn University derives its support from the State and Federal Governments and from other sources. Funds are as follows:

1. Direct annual appropriations made by the State for support, maintenance, and development of public education, including campus in-

- struction, agricultural research, agricultural extension, engineering research, and educational television.
2. Special appropriations made by the State for buildings, purchase of lands, and improvements.
 3. Funds derived from the original endowment of the institution under the Federal Land-Grant Act and earnings from other subsequently acquired endowment funds.
 4. Income derived from the payment by students of fees and other charges. All tuition at Auburn University is free, except to non-residents of Alabama, but certain fees are assessed to cover specific services.
 5. The Morrill fund appropriated by the United States Government for the instruction of students in the sciences relating to agriculture and the mechanic arts and in the English language, literature, and for the training of teachers in agriculture and the mechanic arts.
 6. Funds received from the State of Alabama through the Smith-Hughes Act derived from the congressional appropriation and paid to Auburn University for its work in the training of teachers of agriculture and home economics.
 7. Such revolving funds as may be incident to the operation of any department where it is advisable to sell or dispose of products produced in the course of conducting the Agricultural Experiment Station or any other unit of the institution.
 8. Gifts, grants, and donations received from alumni, private individuals, and organizations both for general and restricted educational purposes, including scholarships.
 9. Direct annual appropriations made by the United States Government for research purposes and devoted to investigation of scientific agricultural problems. These funds are also for research purposes in connection with investigation of new experiments bearing directly on the production, manufacture, preparation, use, distribution, and marketing of agricultural products, and research work regarding Home Economics, and for the purpose of publishing these results.
 10. Direct appropriations made by the United States Government for the Cooperative Extension Service in support of County Agricultural and Extension Home Agents, for the support of boys' and girls' 4-H club work, and for other types of extension work in agriculture and home economics in the several counties of Alabama.
 11. Each county in the State makes certain appropriations to supplement those from the United States Government and the State of Alabama for the support of the Cooperative Extension Service.
 12. Funds received from industry, governmental agencies, and private individuals for special contractual research projects which are handled through the Office of Contract and Grant Development by organized research units and/or in appropriate academic schools.

For Prospective Students

Admissions

General Admissions Information

Application Instructions

Application for admission to any undergraduate school or curriculum of the University must be made to the Admissions Office, Auburn University, Auburn, Alabama 36830. The necessary application forms and specific instructions may be obtained from the Admissions Office.

Students may apply for admission to any quarter of a given calendar year as early as October 1 of the preceding year. Because of the large number of applications, credentials should be filed at the earliest possible time. In every case, complete admission credentials, including the physical examination report, must be filed at least three weeks prior to the opening of the quarter in which admission is desired. The University reserves the right, however, to establish earlier deadlines should the number of applicants exceed the number of students who can be adequately housed or instructed.

A ten dollar (\$10.00) application processing fee must accompany all applications for admission. This fee is required for all undergraduate applications and is not refundable or applicable to registration or tuition fees. In submitting admission credentials, applicants must give complete and accurate information. False or misleading statements can result in denial of admission or cancellation of registration.

A provisional notice of acceptance may be issued after submission of only the application form and up-to-date academic documents, but each applicant must complete and return, at least three weeks prior to the opening date of the quarter in which admission is desired, a medical examination report on a form which will be furnished by the University. The University reserves the right to require any student to submit to such additional medical examinations as are believed advisable for the protection of the University community, and to refuse admission to any applicant whose health record indicates a condition which college work would affect adversely or which would be harmful to the students of the University. Any applicant who fails to comply with this requirement will not be admitted to the University.

Applicants may be admitted to most undergraduate curricula in any quarter; however, to Veterinary Medicine, they may be admitted in the Fall Quarter only. For additional information about admission to Veterinary Medicine, see page 149.

Non-Resident Students

Preference is given to the admission of residents of Alabama; however, applications from out-of-state residents will be accepted. The number of out-of-state students who are accepted will be determined by the availability of facilities and faculty.

In assessing fees, students are classified as resident and non-resident students. Non-resident students (except Graduate students and son and daughters of ministers) are required to pay a tuition fee. The term "resident" as used in

this policy is interpreted to mean the state in which the parents are domiciled. Guardian is interpreted to mean a bona-fide guardian appointed in a judicial decision by a court of law.

A resident, if under 21 years of age, is one whose parents or guardian have been residents of Alabama for at least 12 consecutive months preceding the original enrollment or whose parents were residents of Alabama at the time of their deaths and who has not acquired residence in another state. In all cases of guardianship, the period of guardianship must have been not less than 12 months at the time of original enrollment. If the parents are divorced, residence will be determined by the residency of the parent to whom the court has granted custody.

A resident student, if over 21 years of age, is one whose parents are or were at the time of their deaths residents of Alabama and who has not acquired residency in another state; or who, as an adult, has been a resident of Alabama for at least 12 consecutive months preceding the original enrollment; or who is the wife of a man who has been a resident of Alabama for at least 12 consecutive months preceding the original enrollment.

Alabama laws provide that residency may not be acquired by attendance at an institution of higher learning. Students whose residency follows that of parents or guardian shall be considered to have gained or lost residency in Alabama while in college according to changes of residence of parents or guardian. For fee purposes, residence shall not be considered to have been gained until 12 months after such persons have become residents of Alabama. A dependent of a member of the Armed Forces stationed in Alabama on active duty by official orders shall not be liable for payment of non-resident tuition during the period of military assignment in Alabama.

Any question concerning residency should be directed to the Registrar. The burden of proof of residency is upon the student. A non-resident student who registers improperly under the above regulations will be required to pay not only the non-resident fee, but also a penalty fee.

Pre-College Counseling Program

As a means of helping entering freshmen and transfer students to make wiser decisions in choosing their field of study and to adjust more readily to their first quarter of college life, Auburn University has instituted the Pre-College Counseling Program.

Summer program for fall quarter freshmen — The summer program for freshmen entering the fall quarter consists of a series of sessions on campus. During these sessions students talk with trained counselors and are given the opportunity to plan, with advisors, a schedule for their first quarter of college work.

Program for freshmen entering winter, spring, or summer quarters — Students entering Auburn University as first quarter freshmen for any quarter, other than the fall quarter, are usually required to report to campus one day earlier for counseling activities.

Program for transfer students — Transfer students entering the winter, spring, or summer quarters are usually required to report to campus one day earlier than other students. Transfer students entering the fall quarter are given the opportunity to attend a program in the latter part of the summer to meet with advisors in order to have their transcripts evaluated and plan a schedule for the fall quarter.

Admission To Freshman Class

Standard Admission

Commensurate with available faculty and facilities, favorable consideration for admission will be given to graduates of accredited secondary schools whose college ability test scores and high school grades indicate they can be successful in fields of study in which they seek enrollment.

Although the University makes few stipulations about definite high school courses, all students planning to apply for admission should emphasize in their programs the following subjects: English, mathematics, social studies, sciences, and foreign languages. A minimum of 16 high school units is required for admission. Four of these units may be vocational subjects.

Students applying for admission to the professional curricula in architecture, industrial design and interior design will be required to make a satisfactory score on the architectural school aptitude test. Application for this test must be made to the Educational Testing Service, P.O. Box 592, Princeton, N. J. 98540. Tests are given on certain dates at the Auburn campus as well as at other university and college campuses throughout the United States.

Alabama residents are required to complete the American College Test (ACT) on one of the announced national testing dates. Either the ACT or the Scholastic Aptitude Test (SAT) of the College Entrance Examination Board will be accepted for applicants from states other than Alabama. High school students may secure application forms and information regarding the tests from their principals or counselors. Scores attained on these tests are used as a partial basis for admission, for placement in English, chemistry, and mathematics, and for awarding university-administered scholarships and loans.

One unit of college preparatory mathematics is required for admission to any curriculum. This must be a course in basic or fundamental mathematics specifically designed to include the study of the deductive nature of mathematics, and cannot be replaced by such courses as business mathematics, personal finance, general mathematics, etc.

A second unit of college preparatory mathematics is required for all curricula which include MH 121, College Mathematics. One of these two units must be principally the study of geometry, including the geometry of three dimensions. A third unit is required for those curricula containing MH 160, Algebra and Trigonometry, as a first course in mathematics. Students planning to study architecture, chemistry, engineering, mathematics, or physics should take a fourth unit including a thorough study of the basic analytic properties of the elementary functions.

Applicants of mature age who have not graduated from high school may be considered for freshman admission if scores made on the USAFI General Educational Development Test, the American College Test and/or such special achievement tests or subject examinations as may be recommended by the Committee on Admissions, indicate educational attainment equivalent to graduation from high school. Applicants from non-accredited high schools may be accepted if they make satisfactory scores on tests prescribed by the Committee on Admissions.

Early Admission

Students of high academic promise may be admitted directly from the eleventh year of school without the secondary school diploma. Basic requirements for early admission are:

1. Proper personal qualifications.
2. Superior competence and preparation as evidenced by the high school record, and by satisfactory scores on pre-admission aptitude tests, College Entrance Examination Board achievement tests in English, mathematics, and history or a science, pre-registration placement tests, or proficiency tests administered by appropriate departments at Auburn University.
3. A letter from the principal recommending the applicant as to emotional and social maturity and readiness for college work, and indicating approval of his early admission.

Details of procedure for consideration of early admission can be obtained from the Admissions Office.

Advanced Standing Program

Under the Advanced Standing Program, able students of superior preparation are afforded the opportunity of being placed in programs suited to their abilities and preparation for college study. Some exceptionally able students may be admitted prior to high school graduation. (See "Early Admission.") High school graduates of superior achievement may be able to qualify for advanced placement and for credit which may count toward degree requirements.

Advanced Placement — Entering freshmen who demonstrate superior preparation are accorded the opportunity of qualifying for advanced placement and/or credit, not to exceed a total of 45 quarter hours, in the following areas: Biology, Botany, Chemistry, English, Foreign Language, History, Mathematics, Physics, and Zoology.

Advanced placement or credit may be granted to entering freshmen who during their senior year in high school have made satisfactory scores on the College Board Advanced Placement Examinations.

A student with special competence in a specific area, as evidenced by high school grades and scores on college ability or achievement tests, may apply for a departmental examination which may qualify him for advanced placement or credit in that department.

The amount of credit allowable through advanced placement is determined by the dean and the department head concerned. A brochure describing the Advanced Standing Program will be forwarded by the Office of High School Relations upon request.

Proficiency Examinations — Proficiency Examinations similar to final examinations may be administered by a department upon application of the individual student. A student who has pursued college-level work in secondary school, in class or on a tutorial basis, or through private study, may make application for a proficiency examination. If he earns a satisfactory grade, he will be eligible for placement in an advanced course and for credit in the subject covered by the examination.

Admission Of Transfer Students

An applicant who was not eligible for admission to the University upon graduation from high school must present a minimum of 96 quarter hours or 64 semester hours of college work attempted in order to be considered for admission as a transfer student.

For residents of Alabama or other states party to the Southern Regional Education Board, a satisfactory citizenship record, an overall average of "C" or better on all college work attempted,^{*} and eligibility to re-enter the last institution attended are required for transfer admission. For residents of other states, in addition to the other two stipulations, an overall "B" average on all college work attempted is required. Entrance examinations may be required of applicants transferring from colleges with which the University has had little or no experience.

Graduation from a junior college does not of itself assure an applicant of admission to Auburn. Such applicants must also present an overall average of "C" or better on all work attempted. The maximum credit allowed for work done in a junior college will not exceed the number of hours required in the first two years of the student's curriculum at Auburn.

Each applicant must submit two official transcripts of his record from each institution attended. It may also be necessary for a transfer applicant to submit one transcript of his high school record.

The amount of transfer credit and advanced standing allowed will be determined by the appropriate dean and the Registrar. Acceptance of "D" grades is determined by the dean, except that credit is allowed in Freshman English only on grades of "C" or better. See page 47.

Students transferring from institutions not fully accredited by the appropriate regional agency will be granted provisional credit. Final credit will be assigned after the student has completed one full year of work (credit hours and residence quarters) at Auburn University. If a "C" average is not achieved, the amount of credit will be reduced in proportion to the number of hours in which a "C" average was not made.

Admission Of Transient Students

A student in good standing in an accredited college or university may be admitted to Auburn University as a transient student when available faculty and facilities permit.

To be eligible for consideration for admission, a transient student applicant must submit a satisfactory medical report and the Transient Student Form (in duplicate) properly completed and signed by the Dean or Registrar of the college or university in which he is currently enrolled.

Permission to enroll in courses on a transient basis is granted for one quarter only, and a student who wishes to seek re-entry in the transient classification must submit another Transient Student Form. It must be understood that transient student permission does not constitute admission or formal matriculation as a regularly enrolled student (degree candidate); however, a transient student is subject to the same fees and regulations as a regular student, except that ROTC, physical education, and academic continuation in residence requirements shall not apply.

It is the responsibility of the transient student to check with the academic department offering the courses in which the student wishes to enroll to determine if he has met course prerequisites and if he has the necessary preparation to take the courses desired.

If at any time a transient student desires to enroll as a regular student, he must make formal application for admission to the University as a trans-

* When computing the overall grade average, Auburn University uses the 3.0 system and counts all grades earned, including those earned in courses which were later repeated.

fer student and submit two complete transcripts from each college or university attended.

Admission Of Unclassified Students

For residents of Alabama and other states party to the Southern Regional Education Board, admission to undergraduate programs as an Unclassified Student may be granted on the basis of a baccalaureate degree from an accredited senior college or university. For residents of other states, Unclassified Student admission may be granted on the basis of the baccalaureate degree and an overall "B" average. Students desiring to enroll in this classification must submit the same admission credentials as transfer applicants.

Admission Of Special Students

Persons who cannot fulfill the regular admission requirements for freshman standing but otherwise have acquired adequate preparation for university courses may be admitted as special students on approval of the Committee on Admissions and the dean concerned. Course credits earned by special students generally cannot be used as credit toward a degree at Auburn University.

Admission Of Auditors

A person not desiring admission for course credit may be allowed to audit lecture courses or the lecture part of a combined lecture and laboratory course with the approval of the instructor of the course, the appropriate dean, and the Admissions Office. A formal application for admission must be filed, but the \$10 fee and the physical examination report are not required. (See Auditing Privilege, page 46.)

Admission To Graduate Standing

Admission to graduate standing is granted only by the Graduate School of the University. Graduation with a Bachelor's degree or its equivalent from an accredited college or university plus submission of satisfactory scores on the Aptitude Test of the Graduate Record Examinations are requisite for admission to the Graduate School. The undergraduate preparation of each applicant for admission must also satisfy the requirements of a screening committee of the school or department in which he desires to major. Any student in good standing in any recognized graduate school who wishes to enroll in the summer session, in an off-campus workshop or in a short session and who plans to return to his former college may be admitted as a "graduate transient." For further information see section on The Graduate School and contact the Graduate School for a special catalog.

Living Accommodations

The operational plan for University dormitories is predicated on the belief that a university education is not limited to classroom activities. A true university education includes the total experience of living within an educational environment. A schedule of activities, student government, and a diversified program which the residents help plan and in which they participate are important parts of university education.

In all University dormitories and apartments, careful precautionary meas-

ures are taken to assure the security of the residents and their personal property. However, the University does not insure personal property of the residents and is not responsible for damage to or loss of personal property of occupants of University-owned facilities.

The University reserves the right to inspect periodically the rooms of students living in University housing.

Men Students

Auburn University provides dormitory accommodations for approximately 1,257 men students. The men's dormitories are in two areas, Magnolia Dormitories and Roy Sewell Dormitory.

Magnolia Dormitories, housing 1,113 men students, is a three-building unit in the northwestern part of the campus. All units are of brick, hollow tile, and steel construction and together form one of the best-equipped resident areas for college men in the South. Magnolia Hall, Bullard Hall, and Noble Hall are connected to form a harmonious architectural and living pattern. All buildings are arranged into divisions of approximately 40 students. These divisions, wherein residents share the experiences of living and working together, form the nucleus of the dormitory program. There is a resident adviser for each division. The resident advisers are assisted by senior advisers, under the direction of the assistant director and the director, in carrying out the dormitory program.

In the Magnolia Dormitories two students share a room. Each student has his own single bed, closet, and study table. The dormitories contain a dining hall, well-appointed lounge and recreational areas, a post-office, a snack shop, and other facilities to make a complete living unit. The housemothers, the senior advisers, and the assistant director have their apartments in the buildings.

Roy Sewell Dormitory, which houses 144 men students, is equipped with dining facilities and is supervised by a resident staff member. There are two boys in each of the 72 rooms, with separate study hall and lounge.

Room Reservations — In order to provide housing for its students at the lowest rate possible, Auburn University must operate Magnolia Dormitories on the basis of a contract for the academic year and/or the Summer Quarter. The academic year consists of the Fall, Winter, and Spring quarters; or, that portion of this period following the quarter for which a student is accepted by Magnolia Dormitories. The Summer Quarter is regarded as a separate contract period.

It is not necessary for men applying for undergraduate University admission to make separate requests for University housing. Applications For Residence and Housing Agreements are mailed with tentative acceptance forms by the University Admissions Office. If housing applications for that school quarter are in excess of capacity, notice will be given promptly. Inquiries from former Auburn University students and graduate students should be addressed to Magnolia Dormitories. The completed Application, with a \$25.00 check payable to Auburn University for room reservation deposit, should be returned to the Director, Magnolia Dormitories, as soon as possible. Room deposits are held to cover possible loss and/or damage to dormitory property and are not applicable to payments of room rents. The completed Housing Agreement, with prepaid rent for at least one quarter, must reach the Dormitories office not later than the applicable deadline.

Room reservations will be valid only through 5:00 p.m. of the sixth day

after the dormitories open, unless other acceptable arrangements have previously been made with the Director of Magnolia Dormitories.

Refunds of room deposit and prepaid rent will be made under the following conditions:

1. When reservations for the Fall Quarter are cancelled on or before July 1, prior to the beginning of the Fall Quarter.
2. When Winter Quarter reservations, which would be the FIRST quarter of residence, are cancelled on or before December 1.
3. When Spring Quarter reservations, which would be the FIRST quarter of residence, are cancelled on or before March 1.
4. When reservations for the Summer Quarter are cancelled on or before May 15.
5. When room is vacated at the end of a contract period and no future reservations are desired.
6. When a student is prevented from returning because of scholastic deficiencies.
7. When a resident is drafted into military service during a contract period.
8. When personal illness, or physical injury, necessitates withdrawal during a contract period.
9. When a student graduates from the University, or terminates his Housing Agreement in order to participate in one of the University's short term programs (Co-op, Vet. intern, practice teaching).
10. When a student withdraws from the University at the end of a school quarter.

Conditions governing refunds of room deposits and prepaid rent in certain other circumstances are detailed in the Magnolia Dormitories Housing Agreement. Note that a student who has signed an Agreement and who enrolls that quarter will be held responsible for fulfilling his Agreement. A student who has signed an Agreement and who does not enroll will be charged full rental for that quarter but will receive a refund of his room deposit. A student who has applied for housing, has not cancelled before the applicable deadline, but has not signed an Agreement will forfeit his room deposit regardless of whether he enrolls.

Room and Board Charges — Room rent for air-conditioned rooms in Magnolia Dormitories is \$80.00 per school quarter. Rent for rooms not air-conditioned is \$60.00 per quarter. When available, private rooms are 50 percent additional. Residents of Magnolia Dormitories may elect to take meals in Magnolia Dining Hall, or elsewhere. The charge for meals, seven days a week, in the Dining Hall is \$160.00 per school quarter. The charge for meals, five days a week, is \$135.00 per quarter. All board charges are subject to payment of applicable sales tax. Although every effort will be made to maintain the present room and board rates, it may be necessary to increase these charges if related costs advance abnormally.

Room rent for the first quarter of residence in Magnolia Dormitories is payable in advance to that Office not later than: Fall Quarter — July 1, Winter Quarter — December 1; Spring Quarter — March 1; Summer Quarter — May 15. Payment may be made for one quarter, or for the full academic year. Rent due, following the first quarter of residence, is payable at the beginning of each quarter. Board accounts for students electing to take meals in Magnolia Dormitories are also due and payable in full at the beginning of each quarter. How-

ever, when deemed necessary, arrangements may be made with the Cashier in the Magnolia Dormitories Office for payment in not more than three installments.

Students who, at the beginning of a quarter, elect to have meals in Magnolia Dining Hall may withdraw from such arrangements within the first two weeks of the quarter. In these instances, there is a minimum charge for the two weeks plus a \$7.50 cancellation charge. No change in board arrangements may be made by dormitory residents after this period has elapsed. Students withdrawing from school after two weeks will be charged on a daily basis plus the \$7.50 cancellation charge.

Off-Campus Housing. The majority of the male students reside in fraternity houses and in privately-owned housing within the community. These accommodations include dormitories, boarding houses, homes, trailers, and apartments. Charges for rooms without meals range from \$50.00 to \$130.00 for each school quarter. Prices for meals in the various boarding houses range from \$55.00 to \$65.00 per month.

University representatives neither inspect nor approve off-campus housing. The only requirement is that the accommodations conform to the local code of health and safety regulations. However, the same general rules of student conduct apply in off-campus residences as are applicable in University operated dormitories. It is justifiably assumed that the conduct of each student living off-campus will reflect maturity of judgment and a feeling of pride in being a member of the Auburn community.

Thorough familiarity with the terms of the rental agreement and personal contact with the owner, or agent, will help avoid future misunderstandings. The quality of accommodations and the distance from the campus can best be determined through actual inspection before renting. A current file of available off-campus accommodations is maintained in the Office of Student Affairs, 304 Martin Hall. Lists of off-campus room vacancies are available upon request during the two months preceding the Fall Quarter.

Women Students

Housing for approximately 2,500 women is furnished in the women's dormitories. Residence in the dormitories is compulsory for all women students unless the Dean of Women gives them special permission to live elsewhere. A head resident is in charge of each dormitory and serves as counselor to the students as well as dormitory hostess. Women students are subject at all times to regulations of the University and the Associated Women Students.

All students residing in the dormitories must eat in the University dining halls where meals are served under the supervision of trained dietitians. Costs for special diets will be borne by the student.

The women's dormitories consist of the main dormitory group and the South Women's Dormitories.

In the main dormitory groups are the following:

No.	Name	No.	Name
I	Elizabeth Harper Hall	VIII	Ella Lupton Hall
II	Kate Conway Broun Hall	IX	Helen Keller Hall
III	Willie Little Hall	X	Marie Bankhead Owen Hall
IV	Kate Teague Hall	XII	Dana King Gatchell Hall
V	Letitia Dowdell Hall		Alumni Hall
VI	Allie Glenn Hall		Auburn Hall
VII	Mary Lane Hall		

Harper, Broun, Little, and Teague Halls, Social Center and the Women's Dining Hall form a quadrangle in the foreground of the dormitory area located across from the Auburn Union. The Dining Hall is readily accessible to all the dormitories in the area. Each of the dormitories, I through X, houses approximately 100 girls and is arranged in suites consisting of two double rooms connected by a tiled bathroom. The rooms are equipped with twin beds, a double desk, two desk chairs, a reading lamp, a bedside table, an easy chair and two chests. Lounge space is furnished in each building. Dormitories I through IV and VII are air-conditioned.

Dana Gatchell Hall, located on Mell Street, adjacent to the other dormitories, houses approximately 50 girls. It has community baths located at the end of the hallways and is furnished in a manner similar to the other dormitories. Gatchell Hall is a cooperative dormitory. Here the girls prepare their own meals and do their own cleaning; as a result, cost of room and board is much less than in the other dormitories.

Alumni Hall, located on South College Street, houses approximately 100 girls. This dormitory has its own dining hall located in the basement of the building. The rooms are not in suites, there are community baths, and the furnishings are the same as in the other dormitories.

Auburn Hall, on East Thach Avenue, houses 182 girls. Community baths are located conveniently on each floor. The girls living here take their meals in Alumni Dining Hall, approximately two blocks away.

The offices of the Dean of Women, the Assistant Dean of Women, the Assistant to the Dean of Women, the Dormitory Supervisor, and cashier's office, are located in Social Center. In addition, there are two large living rooms, a dining room, and a kitchen which may be used by student groups. The post office for the girls in this area is located on the ground floor of the Women's Dining Hall.

The South Women's Dormitories are located in the area in front of the President's home. Ten new air-conditioned dormitories, a dining hall, and an administration building are in the group.

The dormitories are:

A Mollie Hollifield Hall	F Dixie Bibb Graves Hall
B Annie Smith Duncan Hall	G Camille Early Dowell Hall
C Marguerite Toomer Hall	H Stella White Knapp Hall
D Zoe Dobbs Hall	J Mary Boyd Hall
E Berta Dunn Hall	K Sarah Sasnett Hall

Each of the three-story dormitories houses 110 girls and the six-story dormitories, Sasnett and Boyd, house 216 girls. The rooms are arranged in suites with a connecting bath between each two double rooms. Each room is furnished with twin beds, a bedside table, two desks and desk chairs, a double dresser and an easy chair. A formal lounge and an informal lounge are in each dormitory, with study rooms on each floor.

The administration building, Lucille Burton Hall, is similar to Social Center and houses the office of the Head of Women's Housing, the cashier's office and the post office for this area. There are several attractive lounges in the building and a number of guest rooms are on the second floor.

All students provide their own bed linens and any other items they may wish to use to make their rooms more attractive.

Room rent per school quarter is \$70 in Auburn and Alumni Halls, \$80

in the non-air-conditioned dormitories, and \$100 in the air-conditioned dormitories.

All women students are required to take meals in the dormitory dining halls. There are two meal plans available. The cost of the seven days per week plan is \$150 plus sales tax. The cost of the five days per week plan is \$125 plus sales tax. The room and board charges will be collected when the student arrives on the campus.

Room Reservations — Dormitory reservation forms will be mailed to the applicant at the time she is accepted for admission to the University. This form must be returned to the Head of Women's Housing with a deposit of \$25.00 within three weeks of the date of acceptance. No room reservation is binding until this fee has been received.

Refund of room reservation fees will be made under the following conditions:

1. When reservations for the fall quarter are cancelled on or before August 1.
2. When the reservations for the winter quarter are cancelled on or before December 15.
3. When reservations for the spring quarter are cancelled on or before March 1.
4. When reservations for the summer quarter are cancelled on or before May 15.
5. When room is vacated at the end of a quarter and no further reservation is desired, if notice has been given by the deadline stated above.
6. When a student is prevented from entering because of scholastic deficiencies.
7. When personal illness or physical injury necessitates cancellation of reservations.

A room reservation is not valid unless the applicant has been admitted to Auburn University.

Married Students

Auburn University operates the Caroline Draughon Village housing project for married students. The project has 336 apartments. Of these, there are 96 two-bedroom air-conditioned, 80 two-bedroom non air-conditioned, and 160 one bedroom non air-conditioned apartments.

The apartments are furnished including an all electric kitchen, completely furnished living room and one bedroom, spacious closets, ample cabinets, all tile baths with shower-tub combination, interspring mattresses, steam heat, and television outlet.

Deposits are accepted for housing in Caroline Draughon Village from prospective male married students, who have been accepted for admission. For additional information, write: Alfred Carter, Housing Manager, 901 W. Thach Avenue, Auburn, Alabama 36830.

Off-Campus Housing — In addition to the University-operated apartment projects, housing may also be obtained in apartments, houses, and trailers in the Auburn community. Rent for these facilities is competitive with University-operated housing. The same general rules of conduct applicable in University-operated apartments and the same referral services of the Student Affairs Office, 304 Martin Hall, as indicated on page 26, apply for married students living off-campus.

Fees and Charges

Auburn University's fees have remained somewhat lower than fees charged at similar institutions in the Southeast and throughout the Nation as a whole. As costs have risen small increases in fees charged have been authorized by the Board of Trustees from time to time to meet these increased costs. Every effort is made to hold these charges to the minimum.

Payment of fees and charges — Students are expected to meet all financial obligations when they fall due. Auburn University reserves the right to deny admission to or to drop any student who fails to meet promptly his financial obligations to the University. It is each student's responsibility to keep informed of all registration and fee payment dates, deadlines and other requirements by referring to the official university calendar of events in the catalog, announcements printed in the *Plainsman* or disseminated through other media from time to time. Where necessary, students should inform their parents of the deadline dates and the necessity for meeting them.

Checks — Checks given in payment of fees and charges are accepted subject to final payment. If the student's bank does not honor the demand for payment and returns the check unpaid, the student will be assessed the late penalty of \$5.00 or \$10.00, whichever is applicable, and if payment is not cleared promptly the student's registration will be cancelled.

Veterans — Veterans enrolled under the Federal G.I. Bill P.L. 358 and P.L. 634 receive their allowances directly from the Government and are responsible for paying their fees and charges on the same basis as other students (this does not apply to P.L. 894 or P.L. 815).

Basic Quarterly Charges

Any student taking 10 or more credit hours or who is certified by the School of Graduate Studies as a full-time student will pay full fees.

University and Student Activity Fee (All Curricula)	\$120.00
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The University Fee is used to meet part of the cost of instruction, physical training and development, laboratory materials and supplies for student's use, maintenance, operation, and expansion of the physical plant, Library, Student Health Services and Student Activities.

Student Activities Fee supports such activities on campus as intercollegiate athletics, band, debating, dramatic arts, entertainment, exhibits, Glomerata, intramural sports, music, *Plainsman*, lectures and concerts, religious life, social affairs, student government, student union activities and operations, and Tiger Cub. This fee includes 25¢ held in reserve to cover unnecessary damage to University property by students. Any unused portion of this amount will revert to the credit of activities listed above.

Non-Resident Fee	\$120.00
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Charged all non-resident full-time students other than graduate students and dependent sons and daughters of ministers. (See catalog section relating to residency requirements.)

Part-time Students (Not exceeding 9 hours per quarter.)

Registration fee	17.50
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Additional fee per credit hour	10.00
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No additional charge is made beyond 10 hours and students who register for two six-week terms will pay a maximum of

\$120.00 as residents or \$240.00 as non-residents where 10 or more hours are carried. The registration fee is remitted to faculty and staff. All students except faculty and staff are eligible to participate in Student Health Services and Student Activities.

Clearing for Graduation Fee

17.50

A student who is a candidate for a degree in a quarter in which no credit work is taken is required to register in such quarter as a pre-requisite to graduation. (For members of the faculty and staff the charge shall be reduced to \$5.00.) Graduation fee is to be paid in addition to this charge.

Other Fees And Charges

Service and Penalty Charges for Late Registration or Payment	\$5.00-\$10.00
All students, regardless of classification, must clear fees and tuition by the deadline set by the University, or pay the following additional charges:	
Up to and including final official Schedule Adjustment period	5.00
After Schedule Adjustment period closes	10.00
Special Examination Fee	
If taken at a regularly scheduled period	2.00
If taken out of regularly scheduled period	5.00
Equivalency Examination Fee (GED) (each)	7.50
Change in Curriculum Fee (if change made after classes begin)	5.00
Change in Course Fee	5.00
Charge is made in cases where student is not required or advised by the University to change, but has the Dean's permission to do so after classes begin.	
Room and Board (Women)	\$195.00 to \$250.00
All women students, except those granted special permission by the Dean of Women, or those enrolled in the School of Graduate Studies, are required to live in dormitories and take their meals at the Women's Dining Halls. (Add sales tax for meals.)	
Room and Board (Men)	\$195.00 to \$240.00
Residents in the dormitories for men may elect to take their meals in the dormitory dining halls, or elsewhere. Men students may also live off-campus. For further information see page 25. (Add sales tax for meals.)	
ROTC Uniform and Equipment Deposit (refundable)	30.00
All students, both Basic and Advanced, are required to deposit the sum of \$30.00 with the Bursar of the University, prior to enrollment in ROTC, except Naval ROTC. They are then furnished a uniform in good condition and other necessary supplies through the ROTC Supply Office. Upon completion of the ROTC course of instruction, or upon withdrawal of the student therefrom, the uniform and other supplies are turned in and the deposit returned to the student, less \$1.50 per quarter withheld by the Bursar of the University to cover the cost of cleaning and repair of uniforms, when applicable and	

to support ROTC activities as follows: scholarship and marksmanship awards; special apparel and equipment for competitive drill teams, ROTC honoraries, and rifle teams representing Auburn University ROTC; uniforms for sponsors; the official annual Military Ball in an amount not to exceed \$.40 per cadet enrolled that quarter. This charge is subject to change in accordance with requirements of the Army, Navy, and Air Force training programs.

Service and Penalty Charges

(a.) Registration fees billed home	2.00
(b.) Charge for returned checks (each)	2.00
(c.) Failure to pay fees due or make returned check good on notice, where two or more notices required	5.00 or 10.00

Notice — CHECKS ARE ACCEPTED SUBJECT TO COLLECTION

Music Fees

Applied Music per quarter — one $\frac{1}{2}$ hour lesson per week	20.00
Applied Music — two $\frac{1}{2}$ hour lessons per week	30.00
Applied Fundamentals of Music — per quarter (Class instruction in piano or violin)	5.00
Practice Fee — per quarter — one hour per day two hours per day	3.00 5.00
Instrumental Rental Fee — per quarter	3.00

Graduation Fee

Payable at beginning of the quarter in which the student expects to receive a degree

Duplicate Diploma Fee

5.00

Graduate Thesis and Dissertation Binding Fee (per copy)

2.50

Three to five copies usually required.

Doctoral Dissertation Microfilming Fee

25.00

Transcript Fee

1.00

Auditing Fee (per course)

Any student who pays less than full fees must pay this fee for auditing a course. (Not charged to faculty and staff.)

Correspondence Study Course Fees (each credit hour)

10.00

Special Services Fees

Cooperative Education Program

15.00

Internship Fee — Veterinary Medicine

15.00

Retail Training HE335 or

Journalism Internship JM425

Fees will be one-half the regular Full-time University Fee and one-half Non-Resident Fee if applicable.

Nursery School and Kindergarten

Nursery School Group, 9 a.m. to 12 noon (per quarter)	22.00
Nursery School Group, 9 a.m. to 12:45 p.m. (per quarter)	35.00
Kindergarten Group, 1 p.m. to 4 p.m. (per quarter)	22.00
These fees must be paid before the child is admitted. For application information, contact Head of Dept. of Family Life and Early Childhood Education.	

Registration Fee Cancellations or Refunds

If student pays fees prior to opening of the quarter, then withdraws prior to registration date for new students, all fees will be refunded. If student resigns within the first two weeks after classes begin, all fees, less charges, will be refunded, except the sum of \$10.00 will be retained as a registration fee, and if the student has used the University Health Services, during that quarter, the \$7.00 Health Fee will be retained also. No refunds will be made in case of withdrawal after two weeks of classes, except in cases of withdrawal caused by personal illness or call into military service. (For Summer Quarter—Term II—No refunds will be made in case of withdrawal after the first week of Term II.) Students suspended for disciplinary reasons are not eligible for refunds nor cancellation of accounts due.

Financial Aid

Auburn University has an **Office of Student Financial Aid** to provide financial assistance to aid worthy students in meeting educational costs incurred while attending the University.

The University participates in the College Scholarship Service (CSS) of the College Entrance Examination Board. Participants in CSS subscribe to the principle that the amount of financial aid granted a student should be based upon financial need. The CSS assists colleges and universities and other agencies in determining the student's need for financial assistance. Entering students seeking financial assistance are required to submit a copy of the Parents Confidential Statement (PCS) form to the College Scholarship Service, designating Auburn University as one of the recipients, by March 15 of each year.

A pamphlet describing financial aid programs and procedure for making application may be obtained by writing to the Office of Student Financial Aid, Auburn University.

Available Assistance Programs

Scholarships — Awards made to students with financial need who have demonstrated high academic promise and attainment.

Federal Educational Opportunity Grants — Limited number of grants for students with exceptional financial need.

National Defense Student Loan and Institutional Loans — Long term loan programs for students who can demonstrate need.

Federal-State Student Guaranteed Loans — Long term loan program whereby students may borrow from lending institutions (banks, credit unions, etc.)

College Work-Study Program — Program of employment for college students coming from low income families, who need to work to remain in school.

Student Employment — Many students are able to find part time employment on and off campus. A student may file an application with the Office of Student Financial Aid and vacancies are filled as they occur. The office acts as a referral agency and cannot promise jobs to students. Student

wives may secure assistance in locating employment by contacting the University Personnel Office.

Graduate Aid — To promote scholarship and research among graduate students, a number of Graduate Teaching Assistantships, Graduate Research Assistantships, Graduate Fellowships and Traineeships are available. Contact the Dean of the Graduate School for information and application.

Benefits For Veterans And Dependents Of Veterans

Federal — Consult local County Veterans Service Officer or Veterans Administration Office, Montgomery, Alabama.

State — Consult the Department of Veterans Affairs, P.O. Box 1509, Montgomery, Alabama 36102.

Social Security — Consult the local or county Social Security Office.

Vocational Rehabilitation — Consult the State Rehabilitation Office, Room 461, State Office Building, Montgomery, Alabama 36102.

Employment

The Student Financial Aid Office in 202 Martin Hall assists students in obtaining employment to defray a portion of their educational expenses. The University, however, does not advise freshmen to attempt work during their first quarter on campus unless it is essential. Earnings vary with the job requirements and previous work experience. Since employers must know when a student is free for work, little assistance can be given any student until his class schedule is known.

The Office functions only as a referral agency and cannot promise jobs to students; however, every attempt is made to place capable students needing work.

Students are also assisted in locating full-time summer employment at resorts, national parks, camps, with governmental agencies and in business and industry. Information and applications for such employment should be secured early in the Winter Quarter.

Student wives and other non-students may secure assistance in locating suitable employment on the campus by contacting the University Personnel Office which is located on the ground floor of Langdon Hall.

Educational Benefits For Veterans

Many current publications describe in complete detail the educational programs authorized by Congress under the following federal acts: Public Law 16 (Vocational Rehabilitation), Public Laws 894 and 815 (Vocational Rehabilitation Revised), Public Law 634 (War Orphans Educational Assistance Act) and Public Law 358 (Veterans Readjustment Benefits Act of 1966).

Auburn University is fully approved by the Veterans Administration to give training under these laws. Veterans planning to attend school under one of these laws should make application directly to the Veterans Administration and get prior approval before entering school.

Those entering school under the benefits of any one of the laws should have sufficient funds to finance themselves for one quarter or at least until payments begin coming in from the Veterans Administration (approximately two months).

For further information write to the Office of Student Financial Aid, Auburn University, Auburn, Alabama.

Student Services

The Dean of Student Affairs, the Dean of Women and their respective staffs assist students with their problems and aid them in their adjustment to University life. Their offices serve as a general clearing house for matters pertaining to the welfare of all students.

The Dean of Student Affairs works mutually with students or groups on campus problems. His office is located in Mary E. Martin Hall. He supervises the following projects that are supported by the Student Activity fees: Associated Women Students, *The Glomerata*, *The Plainsman*, Entertainment, Lectures and Concerts, Religious Life, Student Body, Student Social Life, Student Union activities, and *The Tiger Cub*.

The Dean of Women's duties include matters pertaining to the welfare of all women students. As Social Director she approves all social functions that University women attend. Her offices are located in the Social Center.

Each academic dean, either personally or through appointed assistants, guides each student in his academic problems, especially in arranging schedules, maintaining continuation in residence requirements, and satisfying subject-matter degree requirements.

The Registrar and his staff counsel students regarding registration, academic records, graduation requirements, and Selective Service regulations. The Registrar's Office is located on the ground floor of the Mary E. Martin Hall.

Counseling Service

A variety of services is provided for all students free of charge by the Student Counseling Service in 305-318 Martin Hall. Students may come by the offices in person to make an appointment or call 826-4744. The offices are open from 8 a.m. to 12 noon and 1 to 5 p.m., Monday through Friday.

The staff of the Student Counseling Service perceives counseling as a process in which the student comes to the counselor voluntarily to gain additional self-understanding that he may solve his own problems as they arise now and in the future. The counselors do not perceive themselves as advisors, but as individuals who are concerned with helping students find solutions to their problems. The counselors respect the ability of the students to make their own choices after they have a better understanding of themselves. Counseling is available to all students at Auburn. These services include:

Educational Counseling. In addition to the academic departmental advisors of the University, the Student Counseling Service provides services to students who are having academic difficulties. Attempts will be made to determine the causes of the difficulty. Counselors help students in study habits, note taking, listening skills. Educational Counseling is interrelated with other areas, and only by a complete understanding of all problems can a student's academic difficulties be alleviated.

Personal Counseling. Many University students have personal concerns which may interfere with their academic success. Counselors attempt to offer an atmosphere in which students may discuss such problems freely and confidentially. Personal emotional adjustment, dating, marriage, home relationships, social relationships, adjustment to college work, and plans for the future are only a few of the many concerns. Often, effective solutions can be reached by a student through a counselor-counselee relationship.

Career Counseling. Counselors assist students in making a thorough self-appraisal of interests, abilities, and personality traits so that they may utilize this information in making a wise career choice. Counselors interpret the data from tests, discuss all possibilities of success, and help the student work through the decision-making process. Students who are indecisive about a major, or who wish information on their adaptability to selected programs of study may gain a realistic appraisal of themselves through counseling and become better equipped to make more intelligent academic choices.

Learning Enhancement Groups. Individual growth and development often are enhanced by experiences in small groups that meet regularly with a Student Counseling Service staff member. Activities vary with the needs and interests of individuals in each group.

The Career Information Library maintained in the Student Counseling Service is available to all students for use without appointment.

University Placement Service

The University Placement Service assists graduates in obtaining employment in their chosen professions. This office brings representatives of commercial and industrial firms as well as government agencies to the campus each quarter for personal interviews with students. Seniors and graduate students who desire information and placement assistance should confer with the Director, 400 Martin Hall.

Student Health Service

The Student Health Service of Auburn University renders the following services: (1) out-patient medical and surgical service by staff doctors only; (2) hospitalization at the University Infirmary; (3) local ambulance service; (4) medical supervision of the physical education and athletic programs; (5) health education; and (6) campus sanitation. These services are administered by the medical staff of the Health Service.

The University owns and operates a 65-bed infirmary equipped with a modern clinical laboratory and X-ray facilities. Working in conjunction with the State Health Department, annual tuberculosis skin testing is available for students, faculty and employees of the institution.

Each entering student is required to file a medical examination report completed by his private physician before he can be admitted to Auburn University. Forms for this report will be furnished by the University.

The Student Counseling Service and the Student Health Service are available to students in helping them solve emotional problems. A psychiatrist is also in attendance at the Infirmary. The Infirmary also has a well-equipped physiotherapy department. A qualified physiotherapist is in attendance two afternoons each week.

No major surgery is performed in the Infirmary. Elective surgery should be performed in the student's home town, or by referral to a specialist during vacation periods or to a local surgeon. Emergency surgical operations are the responsibility of the student. Students who are in need of emergency operations and those having severe multiple or compound fractures will be referred for treatment and the expense will be a responsibility of the student. The University has available a surgical consultant who may be called when needed. The expense will be charged to the student requiring such consultation.

The Student Health Service is available to all regularly enrolled students of the institution. Medical service is not provided by the University for the families of married students, but a list of local physicians will be made available by the Student Health Service upon request.

The Out-Patient Clinic is open from 8:00 a.m. to 11:30 a.m. and 1:00 p.m. to 4:00 p.m. each week day, Monday through Friday. Clinic hours are from 8:00 a.m. to 11:30 a.m. on Saturday, and 8:30 a.m. to 9:30 a.m. on Sunday. Emergency treatment is available 24 hours daily. Visiting hours at the Infirmary are from 10:00 a.m. to 1:00 p.m., 3:00 p.m. to 8:00 p.m. each day. Only two visitors per patient are allowed simultaneously.

University physicians do not make calls outside the Infirmary or attempt to treat students in their rooms. Students who are too ill to come to the Infirmary will be furnished with local ambulance service. Parents will be notified by the University physician if a student is believed to be seriously ill.

Each student is entitled to 15 days free hospitalization at the University Infirmary during each school year. This includes professional services of the medical staff of the Student Health Service, general floor nursing care, ordinary medications, room and board, linen, routine laboratory and X-ray procedures.

The Student Health Fee does not include surgery, consultation, special X-rays, special medications, or special nurses. A charge is made for these, but only an amount sufficient to cover the cost.

The services of local physicians are available at the students' expense either at their places of residence or when properly admitted to the University Infirmary.

The Student Health Service is not available to students during the following vacation periods: Christmas holidays and the periods between the close of the Summer Quarter and the opening of the Fall Quarter.

During epidemics, the staff of the Student Health Service will make every possible effort to care for ill students at the Infirmary, but if Infirmary staff and facilities should be inadequate, the University will not assume responsibility for payment of services rendered by outside doctors or other hospitals.

Speech And Hearing Clinic

The Speech and Hearing Clinic of the Department of Speech provides a full range of services for children and adults, including comprehensive speech and hearing examinations. Students with speech problems, or hearing problems are urged to contact the Speech and Hearing Clinic during their first quarter of residence. The Speech and Hearing Clinic also carries on a continuing program to provide assistance for all students for whom English is a second language. Appointments may be made in Room 204 Samford for speech and/or hearing examinations or by calling 826-4682. No fees are charged for student services.

Student Book Stores

Alpha Phi Omega service fraternity sponsors a non-profit bookstore on the campus. The purpose of this store is to provide a more economical means for students to purchase and sell their books. The bookstore is located in the subway of the "L" building. A University Book Store is located in the Auburn Union.

Student Insurance

The Student Body sponsors an Accident and Sickness Insurance Plan which is available to all full-time or part-time undergraduate and graduate students. This Plan is underwritten by Standard Life and Accident Insurance Company, Oklahoma City, Oklahoma, and is administered by an insurance agency in the state. It provides the student with maximum coverage at minimum cost. Benefits include hospital fees and expenses, surgery, visits by a physician, ambulance service, x-rays, as well as other items. Enrollment in the Plan is offered during each registration period. Further information may be obtained from the Office of Student Affairs, 304 Mary Martin Hall.

Student Activities

The Student Body

The student body is composed of all Auburn undergraduate students, and elects its own officers. Divided into three branches, the student government works cooperatively for the betterment of students of Auburn. Students are encouraged to take part in the political life of the campus.

Student Government

Each spring members of the three-branch student government are elected. Student government controls extracurricular activities, provides members for joint student-faculty committees, and works for the welfare of the University community.

Student government is made up of the executive, legislative and judicial branches. The executive group is composed of the President, Vice President, Secretary, Treasurer, and members of the Executive Cabinet. The 21 cabinet members are known as Superintendents and are appointed by the President and approved by the Senate. In addition, there may be advisory committees to the President.

Members of the legislative branch, the Student Senate, are elected from each of the ten undergraduate schools. In addition, there are six Senators-at-Large. Students refer their suggestions to their senators, who bring them before the Senate.

The Student Jurisprudence Committee has one presiding Justice and six student Associate Justices and is vested with the Judicial power of the Student Body. The committee interprets the Student Body constitution and renders decisions.

Associated Women Students

The purpose of the Associated Women Students is to uphold high standards of scholarship, and to create, promote and maintain a high sense of honor and integrity in all phases of University life.

Each Auburn undergraduate woman student is automatically a member of AWS when she enters the University. AWS is made up of three councils: the Executive, Legislative, and Judiciary. The Legislative Council is composed of representatives of the dormitory house councils and the elected officers.

AWS plans and conducts a well-organized program for women students.

Student Publications

The Auburn Engineer — published monthly for and by students in Engineering.

The Auburn Pharmacist — published quarterly by Phi Delta Chi, professional Pharmacy fraternity.

The Auburn Veterinarian — booklet published quarterly for and by students in Veterinary Medicine.

Auburn Design — published by the Industrial Design Forum.

The Glomerata — student publication; production costs covered by Student Activities Fee, student organizations and advertising.

The Helm — a monthly paper published by NROTC students.

The Auburn Plainsman — a weekly paper published by students of the institution; production costs covered by Student Activities Fee and advertising.

The Tiger Cub — annual student handbook; production costs covered by Student Activities Fee and advertising.

The Auburn Union

The Auburn Union is the center of non-academic student and faculty life. The building, located in the heart of the campus, provides a living room for students away from home — a place to relax, to entertain friends, and to find convenient dining and school supply services. Planned programs of social, recreational and cultural events help develop students in the art of human relations.

Located in the Auburn Union are the War Eagle Cafeteria and Snack Bar, Alumni Offices, Faculty Club, Student Government Offices, Publications Offices, University Book Store, Union Ballroom, meeting rooms for student organizations, commuters lounges, banquet rooms, reading and TV lounges, and Union staff offices.

The main desk has become the central information center on campus. On hand are the registration cards of each student enrolled, listing class schedule, home address, and campus address.

Cultural, Musical, Theatrical Activities

Lecture and Concert Series. Outstanding concert artists and nationally known lecturers are presented each year for Auburn Students. Additional lectures, concerts and special programs are presented by the various Schools, and the Auburn Union sponsors frequent entertainment by popular artists. Most of these events are financed by the student activities fees; students are admitted without charge upon presentation of ID cards.

Auburn University Theatre. The Drama Department functions as producer for this organization. The season of plays reflects the commitment of the Department to expose actors, designers, technicians and teachers to a wide variety of literary theatrical forms and to present this material to the entire University and city community for its enjoyment and cultural enrichment. At present, seven productions are being offered during the regular school year. Two of these are children's plays which tour public schools in Alabama and Georgia. Students from all areas of the University and faculty members and members of the community are welcome to audition for all productions.

The Auburn Players is a dramatic organization whose purpose is to promote interest and participation in the theatrical field.

Auburn University Concert Choir is limited to approximately 50 members, open to all students by audition. The choir sings concert and special programs on campus each quarter, takes an annual spring tour, makes regular television appearances, and sings for various functions around the state. Rehearsals are held daily, and degree credit is available.

Choral Union, a large chorus, is open to anyone without audition. This group usually sings two concerts a year, consisting of large choral works, often with the Auburn Symphony Orchestra. Rehearsals are held once a week and degree credit is available.

Men's Glee Club is open to all male students. It makes regular appearances on campus and in the surrounding area. The music is of a lighter nature, including popular music and Auburn songs. Rehearsals are held once a week, and degree credit is available.

Marching Band. Auburn University supports a Marching Band which frequently accompanies the football team on game trips, and represents the University at various campus, state, and out-of-town functions. It consists of approximately 140 players who receive special training in drill formations. Physical Education may be waived during the fall quarter for students who are members of the Marching Band.

Concert Band consists of advanced students who have passed the work of the preliminary bands, and students who are preparing to teach band in the schools. It provides music for various University activities and some off-campus concert tours. Regular training which embodies instruction in the rudiments of music and the use of band instruments is given free of charge at the band practice periods. These activities may be taken with or without degree credit.

Orchestra. The Music Department sponsors this symphonic group for the development of musical talent and perfection of individual achievement in ensemble playing. Students in the early stages of musical training, especially those in violin, viola and cello, are invited to participate. Membership is by permission of the director. This activity may be taken with or without degree credit.

Opera Workshop. The Workshop is open to all students interested in musical or dramatic work in producing operas. Membership is open with or without degree credit. Students are trained in the various phases of operatic production largely through actual stage performances of outstanding operas.

Educational Television. Programs produced in the Auburn Television Studio are seen throughout the state on the Alabama ETV Network, 2, 7, 10, 25, 26, 36 and 42. Staff members in all areas of instruction, research and extension take part in this programming. The Studio offers opportunity for Auburn students in television either through regular courses, positions for observation or employment in either the technical or program production areas.

Intramural Sports

Intramural sports offer students many opportunities to participate in competitive team and individual sports, and recreational activities. Healthful sports, good sportsmanship, and friendly competition are stressed. All students are

urged to participate in the program which is entirely voluntary and largely student-supported and supervised.

Regular tournaments are offered in seasonal team and individual sports.

Fall Quarter.—Touch football, swimming, volleyball.

Winter Quarter.—Basketball, bowling, table tennis.

Spring Quarter.—Badminton, golf, softball, tennis, track, horseshoes.

Summer Quarter.—Softball, tennis, golf, swimming, bowling.

Intramural Sports for Men also operates a check-out service in the Student Activities Building. Any student or student group may check out athletic or recreation equipment on a 24 hour or weekend basis.

Organizations

National Honor Societies

The following members of the Association of College Honor Societies have established chapters at Auburn:

Alpha Epsilon Delta (Pre-Medicine)
 Alpha Lambda Delta (Freshman Scholastic—Women)
 Alpha Psi Omega (Theatre)
 Chi Epsilon (Civil Engineering)
 Delta Sigma Rho—Tau Kappa Alpha (Forensics)
 Eta Kappa Nu (Electrical Engineering)
 Mortar Board (Student Leadership—Senior Women)
 Omicron Delta Kappa (Student Leadership—Junior & Senior Men)

*phi Alpha Theta (History)
 Phi Eta Sigma (Scholarship—Freshmen—Men)
 Phi Kappa Phi (Scholarship—Senior Men and Women)
 Pi Tau Sigma (Mechanical, Aerospace Engineering)
 Psi Chi (Psychology)
 Rho Chi (Pharmacy)
 Sigma Pi Sigma (Physics)
 Tau Beta Pi (Engineering)
 Xi Sigma Pi (Forestry)

Other National Honor Societies:

Gamma Sigma Delta (Agriculture)
 Kappa Delta Pi (Education)
 Omicron Nu (Home Economics)

Pi Mu Epsilon (Mathematics)
 *Pi Delta Phi (French)

National Recognition Societies

The following national societies have chapters established at Auburn:

Alpha Phi Omega (Campus Service—Men)
 Alpha Zeta (Agriculture)
 Arnold Air Society (Air Force ROTC)
 Angel Flight (AFROTC Coed Auxiliary)
 Block and Bridle (Animal Science)
 Cwens (Student Leadership—Sophomore Women)
 Omicron Delta Epsilon (Economics)

Pershing Rifles (Air Force & Army Basic Cadets)
 Phi Beta Lambda (Business Education)
 Phi Lambda Upsilon (Chemistry)
 Phi Zeta (Veterinary Medicine)
 Pi Sigma Epsilon (Marketing)
 Scabbard and Blade (Military)
 Sigma Tau Delta (English)
 Steerage (Navy ROTC)

Campus Leadership and Service Organizations

"A" Club—Varsity lettermen in baseball, basketball, football, track or cheerleading.
 Auburn Veterans Association—Service Organizations open to veterans of the Armed Services.
 Circle "K" Club—International Service Club for college men sponsored by Kiwanis International.
 *Conservative Club—For those students interested in conservative government.
 Spades—Honor Society of ten most outstanding senior men.
 Squires—Honor Society for most outstanding sophomore men.
 Towers—Independent Women's Service and Social Organization.

Religious Organizations

Baptist Student Union—Baptist
 The Canterbury Forum—Episcopal
 Church of Christ Student Group—Church of Christ
 Christian Science Organization—Christian Science
 Jewish Hillel Group—Jewish

Liahona Fellowship—Reorganized Church of Jesus Christ of Latter Day Saints
 Lutheran Student Fellowship—Lutheran
 Newman Club—Catholic
 Unitarian Universalist Fellowship—Unitarian
 Wesley Foundation—Methodist
 Westminster Fellowship—Presbyterian

Departmental and Professional Organizations

Agricultural Council	Collegiate 4-H Club
Agricultural Economics Club	Dairy Science Club
Agronomy Club	Dana King Gatchell Home Economics Club
American Association of Textile Colorists and Chemists	Delta Omicron (Music—Women)
American Chemical Society	Delta Sigma Pi (Business Administration)
American Institute of Aeronautics and Astronautics	Education Council
American Institute of Architects	Engineers Council
American Institute of Chemical Engineers	Forestry Club
American Institute of Electrical & Electronic Engineers	Future Farmers of America
American Institute of Interior Designers	Home Economics Council
American Pharmaceutical Association	Horticultural Forum
American Society of Agricultural Engineers	Industrial Arts Club
American Society of Civil Engineers	Industrial Design Forum
American Society of Mechanical Engineers	International Relations Club
Art Guild	Jr. American Veterinary Medical Association
*Auburn Aero Club	Kappa Epsilon (Pharmacy—Women)
*Auburn Art Forum	Kappa Psi (Pharmacy—Men)
Auburn Conservation Club	Lambda Tau
Auburn Co-operative Education Society	*National Collegiate Association for Secretaries
Auburn Debate Council	Omicron Kappa Pi (Interior Design)
*Auburn German Club	Pharmacy Council
Auburn History Club	Phi Delta Chi (Pharmacy)
Auburn Law Society	*Phi Lambda Sigma (Pharmacy)
Auburn Players	Phi Psi (Textiles)
Auburn Soccer Club	Physical Education Club
Auburn Student Education Association	Poultry Science Club
Auburn Tiger Sharks (Skindiving)	Pre-Veterinary Medical Association
Association for Childhood Education	Saddle D'Armes Fencing Club
*Association for Computing Machinery	Scarab (Architecture)
Block and Bridle Club	Society for the Advancement of Management
Builders Guild	Science and Literature Council
Chemistry Council	Spiked Shoe (Varsity Lettermen in Track)
	Sociology Club
	Women's Recreation Association

Student Wives Clubs

Dames Club	Pharmacy Wives Club
Forestry Wives Club	Wives of Auburn Engineers
Junior AVMA Auxiliary	Wives of Industrial Management Students
Keystones (Building Construction)	

Social Fraternities

Alpha Epsilon Pi Colony	Phi Delta Theta
Alpha Gamma Rho	Phi Gamma Delta
Alpha Psi (professional)	Phi Kappa Tau
Alpha Tau Omega	Pi Kappa Alpha
Beta Theta Pi	Pi Kappa Phi
Chi Phi	Sigma Alpha Epsilon
Delta Chi	Sigma Chi
Delta Sigma Phi	Sigma Nu
Delta Tau Delta	Sigma Phi Epsilon
Delta Upsilon	Sigma Pi
Kappa Alpha Order	Tau Kappa Epsilon
Kappa Sigma	Theta Chi
Lambda Chi Alpha	Theta Xi
Omega Tau Sigma (professional)	

The Interfraternity Council regulates the relationships between the member fraternities.

Sororities

Alpha Chi Omega	Gamma Phi Beta
Alpha Delta Pi	Kappa Alpha Theta
Alpha Gamma Delta	Kappa Delta
Alpha Omicron Pi	Kappa Kappa Gamma
Chi Omega	Phi Mu
Delta Delta Delta	Pi Beta Phi
Delta Zeta	Zeta Tau Alpha

The Pan-Hellenic Council regulates the relationships of the sororities.

* Organizations marked by an asterisk are serving a trial period prior to official University recognition.

Special Programs

Correspondence Study Program

The Correspondence Study Program provides undergraduate instruction for persons unable to attend college on a regular basis. Correspondence courses parallel those given in the University and are taught by members of the University faculty. All courses carry college credit.

Organization of Courses — A complete course outline with full information and instructions is sent to the student upon registration. Courses consist of varying amounts of credit and numbers of units. Each work unit requires certain textbook readings and written preparation. Supplementary reading and reports may be required of the student by the instructor on any assignment. Written work is submitted to the Correspondence Study Office.

Qualifications — Any person who might profit from college level courses is eligible to enroll. No entrance examination is required for admission to correspondence study, but the right is reserved to reject any applicant who does not furnish complete or satisfactory data on the formal application. Enrollment for correspondence study does not constitute admission to Auburn University.

Restrictions placed on Auburn University students regarding correspondence work are described in the regulations in Section III of the Correspondence Study Bulletin.

Credit — Undergraduate credit equivalent to that earned in regular college classes is given for correspondence work. Although graduate credit cannot be earned by correspondence, certain undergraduate deficiencies may be cleared.

Examinations — A final examination is required in each course upon completion of all unit work. The examination should be taken in the Correspondence Study Office but may, on approval, be taken elsewhere under the supervision of an approved proctor. Proctors approved are city or county superintendents of schools, principals of accredited senior high schools, and/or deans and department heads of colleges. Students in military service may arrange to take the examination under the supervision of the Education Officer of their station.

Fees — Fees for correspondence courses are listed in the catalog under "Fees and Charges" (see page 31). Fees are payable in advance and should accompany the application.

For application form and further information write to Director, Auburn University Correspondence Study Program.

Off-Campus Credit

Extension and Correspondence Courses

The following regulations govern extension and correspondence courses: (1) Credit for undergraduate courses in extension and/or correspondence in the major subject or for requirements for the baccalaureate degree shall not exceed, including transfer credits so earned, 10 per cent of the total credit required. (2) Credit hours earned by correspondence or extension will be counted as any other credit hours earned toward meeting the requirements for graduation, but will not be included in the calculation for continuation-in-

residence. Grade point will be assigned to such work toward meeting the requirements for graduation, but in no case will the number of grade points exceed the number of credit hours so earned. (3) Credit for extension and correspondence courses to be taken at Auburn or elsewhere must be approved in advance by the student's dean. (4) No student in residence may enroll for a correspondence course if he can schedule the course or a suitable substitute. (5) No student shall receive credit for correspondence work which, with courses taken in residence, makes a total load exceeding the maximum allowed under college regulations.

In addition to the above, students taking work under the Auburn University Correspondence Study Program are subject also to its regulations as outlined on page 42. For further information, course listing, and application form request a Correspondence Study Bulletin from the Director, Correspondence Study Program, School of Education, Auburn University.

Off-Campus Center Credit

Permission to take work at a university off-campus center is at the discretion of the dean and within the established relationships between the center and the comparable school or college in the parent university of the center. It shall be the responsibility of the student to secure and file with his dean a statement from the center that he may use credit in the desired course toward meeting requirements for the appropriate degree assuming his enrollment at the parent university under comparable classification and circumstances.

Co-operative Education Program

The Co-operative Education Program provides opportunities for students to alternate quarters of academic study with quarters of experience in industry, business, and government positions.

The coordination of academic study and work experience combines theory and practice in the educational process. As a consequence, students find more meaning in their studies and their motivation is increased. The industrial experience contributes to the development of a sense of individual responsibility. The student's judgment and maturity also develop more fully, and a better appreciation of the importance of human relations is gained. Since the employer pays the student a wage or salary during the industrial quarters, this assists the student considerably in his educational expenses.

The Co-operative Education Program is a five-year plan. A student must complete at least two quarters of the freshman year with an above-average scholastic record before he is placed in industry. Transfer students are also considered for the program. Normally a student has seven quarters in industry, and during the senior year he remains in continuous residence in school.

The program is offered in aerospace, chemical, civil, electrical, industrial, and mechanical engineering, applied physics, physics, aviation management, textile management and textile science, business administration, mathematics, pharmacy, agricultural engineering, textile engineering, and industrial design.

Additional information and a booklet describing the program may be secured from the Director, Cooperative Education, 107 Ramsay Hall.

University Regulations

Academic Regulations

Students pursuing academic programs must comply with regulations and follow procedures prescribed by the University. Regulations relating to registration, class attendance, physical education, military training, grading system, examinations, degree requirements, honors, and other academic matters are presented in the following pages.

Class Enrollment And Attendance

General Requirements

Class Attendance. Students are expected to attend punctually every recitation, laboratory exercise, and other University duties.

Registration. The orientation of new freshmen and registration of new and previously enrolled students will be held each quarter as indicated in the University Calendar. A service charge will be made for registration after the official dates listed in the University Calendar. (See section on Fees and Charges, page 29.)

Every student is required to be registered in Auburn University in his quarter of graduation or in any other quarter when, in clearing an "incomplete" grade, working on a graduate thesis, or engaged in any other endeavor relating to his normal progress as a student, he makes use of the instructional staff and the facilities of the University. For such special registration, a fee is charged. Registration in a correspondence course through Auburn University satisfies this requirement.

Late Enrollment. After the date, specified in the University Calendar as the last day for new registrations, no student may register except by permission of the dean. The load of a student who registers late shall be reduced at the discretion of his dean and an extra service charge will be made. (See page 30.)

Back Work. In arranging a student's work for each year the dean will require him to schedule first the back work of the lower class or classes, but where this would work a serious hardship on the student the dean may make such exceptions as he deems necessary.

Prerequisites. Prerequisite or corequisite requirements of courses are listed with the course descriptions in the University catalog. It is the responsibility of the student to know these requirements and to comply with them when registering.

Any waiver of these requirements must be approved by the instructor concerned or his department head. In addition the waiver of the junior standing prerequisite established for courses that may be taken for graduate credit must have the approval of the Dean of the Graduate School.

Student Load. The normal quarterly load for a student for any year shall be the maximum number of credit hours prescribed in the curriculum for any quarter of that year. If approved or recommended by the dean, less than the normal load may be taken.

Any freshman or sophomore student, who for any reason is excused from ROTC and Physical Education, when the normal load is 17 hours, may be permitted to take a load of 18 hours inasmuch as no two-hour elective courses are available.

Upon approval of his dean, a student may schedule an overload not to exceed 23 quarter hours if, during his last residence quarter at Auburn University in which he carried 15 or more hours, he earned a 1.5 grade point quotient and passed all work attempted. The student who has scheduled fewer than 15 quarter hours during an intervening quarter or quarters will retain the overload privilege if he has passed all work carried with a minimum grade point quotient of 1.5 in each of the intervening quarters. A student who does not qualify for an overload at the time of regular registration, but who meets the requirements at the end of the quarter, may schedule an overload during either the final registration period or the schedule adjustment period. In special cases the student's dean may make exceptions to the above regulations by written notice to the Registrar.

At the discretion of the dean, a graduating senior qualified to take an overload may be allowed to take up to 25 hours, and one not qualified, a load of 23 hours, provided such load will enable him to graduate in that particular quarter. (This is a one-time privilege and any such senior failing to graduate in that quarter will be subject to penalty for overload.)

A student registering for work in excess of the permitted load will be required to drop the overload during the Schedule Adjustment Period at the beginning of the quarter. If by oversight an unauthorized overload is carried, the requirements for graduation will be increased by the number of credit hours carried in excess of the permitted load.

In the Summer Quarter, students taking courses on the term basis not eligible for the overload will be restricted to the prescribed quarterly load but may take, in one term: (1) one five-hour term course plus 10 hours of regular quarter courses; or (2) two five-hour term subjects.

Change in Program. A student is required to have approval of his dean before changing his program of studies. A fee (see page 30) will be charged for each change in schedule and for change in curriculum after classwork begins when, such changes are not required or advised by the University.

A grade of "Withdrawn" (W) will be assigned when the student drops a course with the permission of the dean within the first two weeks of a quarter, or when he is permitted for special reasons to drop the course without penalty after this period.

A grade of "Withdrawn Failing" (WF) will be recorded in the Registrar's Office for a subject dropped on request of the student after the second week of a quarter. Exceptions are made only as authorized by the dean.

A student's dean may make such substitutions as he deems necessary in the student's course of study. The student's load may also be reduced by the dean when circumstances seem to make it advisable.

Classification. Each undergraduate student will be classified according to the number of quarter credit hours he has earned at Auburn University and other institutions as follows: Freshman, 47 or fewer; Sophomore, 48 to 98; Junior, 99 to 152; Senior, 153 or over.

A student who has been awarded one baccalaureate degree and pursues another course for a second baccalaureate degree will be classified as an undergraduate student.

Students who for reasons acceptable to the dean do not wish to pursue regular courses either as to load or curriculum will be admitted as unclassified students.

Auditing Privilege. A person not regularly enrolled in the University may audit lecture courses or the lecture part of a combined lecture and laboratory course with the approval of the dean and instructor of the subject. The auditing privilege is not regularly permitted in laboratory or combined lecture and laboratory courses; however, in exceptional cases, with the approval of the dean and instructor concerned, persons not regularly enrolled may audit such courses upon payment of the auditing and laboratory fees. Auditors that have not been admitted to the University must secure the registration permit from the Admissions Office. Former students secure a registration permit from the Registrar's Office. Auditors must complete the regular registration process and are listed on the class roll but do not participate in classroom discussions, take tests or final examinations, or make reports and may receive no grades or credits. A fee (see page 31) will be charged for auditing a lecture course. Regularly enrolled students carrying 10 hours or more and members of the faculty may audit lecture courses upon approval of the dean and the instructor concerned without payment of the auditing fee; however, the regular registration process must be completed. Graduate students may audit only one course per quarter.

Curriculum Transfer. If a student transfers from one curriculum to another requiring fewer hours, a year of credit in the former will not carry more than a year of credit in the latter.

If a student transfers from one curriculum to another requiring more hours, the graduation requirements of the new curriculum must be met as far as hours and subject matter are concerned.

For students transferring from other institutions, credit will be allowed for ROTC and Physical Education satisfactorily completed, on the same basis as if the work were taken at Auburn.

A student who is excused for any reason from any subject will be required to substitute other approved work.

Leave of Absence. A student whose work is satisfactory — as reported by his instructors — may be granted a leave of absence to represent the University in the following activities: athletics, band, orchestra, glee club, debating or oratorical contests, dramatics club, thesis work, inspection trips, and such other University activities as the President or Dean of Faculties may approve.

Resignation. After the date carried in the University Calendar for mid-quarter no student may resign from school and escape the penalty of failure. After this date the dean shall contact the student's instructors to determine his scholastic standing at the time of resignation and report such standing to the Registrar. If the student is failing in over half his work he will be charged with one quarter of residence and the number of hours reported as failing.

When a student through illness or physical disability is forced to resign after mid-quarter and when this condition has been the main factor in causing scholastic deficiencies, discretionary power in determining whether a scholastic penalty is to be assigned shall rest with the student's dean. See "Rules and Regulations for Students" in *The Tiger Cub* for detailed regulations.

English Requirements. All students are expected to maintain a reasonable standard of good usage of English, oral and written. Instructors are directed to insist on correct and accurate speaking and writing in all class work. No substitution for the Freshman English requirement is permitted.

Credit in Freshman English Composition earned in another institution may be allowed on transfer, as follows, except that no grade less than "C" will be accepted:

1. If the transferee has less than four and one-half quarter hours credit in Freshman English Composition, no credit is allowed.
2. When the transferee has earned four and one-half quarter hours but less than nine, credit may be allowed for one five-hour course at Auburn, but any hours in excess of five shall not be counted toward graduation. When grades of "C" are made in the first and third quarters, but a grade of less than "C" in the second quarter of a three-quarter course, credit will be allowed for English 101 only.
3. When the transferee has earned nine or more hours and has met the first year English Composition requirement of the other institution, credit may be allowed for both EH 101 and EH 102, provided the minimum of nine hours involves no duplication. A total of 12 hours may be accepted toward the graduation requirement when the 12 hours represent a continuous course sequence at one school. Students entering an undergraduate school at Auburn University after receiving a Bachelor's degree from another accredited college or university are excused from meeting these regulations.
4. No student failing a Freshman English Composition course at Auburn will be permitted to transfer credit from another school to offset that "F," but must repeat the course in residence at Auburn.

Physical Education

University Requirements. Physical education is required for six consecutive quarters. Only one credit per quarter is permitted or transferable to meet the six-quarter requirement.

Unless otherwise approved by the student's Dean, each student who lacks physical education must register for an activity course in the first and succeeding quarters of residence until all requirements are met or until he becomes 26 years of age.

Transfer Students. Students transferring from an institution not requiring physical education will have their physical education requirements reduced by the number of full-time quarters (15 hours credit per quarter) in residence at the former institution. Students who transfer from an institution requiring physical education will have their physical education requirements reduced by the number of quarters of physical education completed at the former institution. Students who have not fulfilled the requirements in physical education at their previous institution will be required to do so at Auburn University before graduation.

Health Classification. A medical examination is required of all students before being admitted to classes. A card stating the physical condition of each student must be filed in the Infirmary and the Department of Health, Physical Education and Recreation before assignment of activities can be approved. Classifications are:

- (A) Regular — This classification permits the student to engage in any activity offered by the Department.
- (B) Adapted — This classification provides for the student with physical limitations which may restrict his participation in the regular program of activities.
- (C) This classification provides for the student with physical limitations requiring program adaptation to his individual needs. The student with this classification will register for Sports Education, PE 105 (no physical activity or very limited).

Military Regulations

Reserve Officers Training Corps

Three Military Services — Army, Navy, and Air Force — are represented by ROTC Units at Auburn. Entering freshmen may enroll in the ROTC of their choice at registration, subject to class capacities, except that students enrolled in Naval ROTC are selected by the Professor of Naval Science prior to registration.

Eligibility for enrollment in the Advanced Course of any ROTC will be subject to departmental policies, criteria, and quota limitations.

Military Training (Basic ROTC). Students enrolling in college for the first time and transfer students not otherwise excused are required to register for and attend scheduled military classes (Basic Course ROTC) in the first and succeeding quarters of residence until military training requirements have been met. Successful completion of the Basic Course (Army, Navy, or Air Force ROTC) is a prerequisite for graduation of all male students except as noted below:

a. Students physically disqualified for military service under current standards prescribed by the Departments of Army, Navy, and Air Force as determined by the respective commandant with the advice of the University physician when his evaluation is appropriate.

b. Veterans with 6 months or more honorable active military service in the U.S. Armed Forces eligible to attend under G.I. Bill of Rights, the Korean War Bill or the Cold War GI Bill. See also paragraph (4) on page 49.

c. Students more than 23 years of age prior to enrolling at Auburn for the first time are excused from Basic military training.

d. Transfer students from institutions not requiring military training will have the basic military requirement reduced by the number of full-time quarters satisfactorily completed in residence at the former institution provided that military training will not be required if the student has completed five full quarters (minimum of 15 hours per quarter). A student who transfers from an institution requiring military training will have his basic military requirement reduced by the number of quarters of military training completed at the former institution. A transfer student contemplating advanced ROTC should consult with the head of the service in which he is interested.

e. Students with outstanding records in ROTC training at regularly established Junior ROTC Units, may be excused from the first year Basic Course provided the student applies for excuse and possesses a Certificate of Eligibility from the PMS of the Junior ROTC Unit. In no case will a student in this category be excused from more than the first year Basic Course. If so excused,

enrollment in the second year Basic Course will be made at the beginning of the Sophomore year.

f. Students who are not citizens of the United States.

Selective Service Deferments. For regulations concerning Selective Service deferment based on enrollment in ROTC programs, see description carried in this catalog under the particular division: Air Force Aerospace Studies; Military Science; Naval Science.

Military Service Credit. Applicants who have served in the Armed Forces, upon submitting records to the Registrar on the official separation form (DD Form 214), may be allowed credit toward advanced standing for service experience as follows:

(1) Courses completed in military service programs at the college level insofar as they fit into the student's curriculum as required subjects or as electives, as approved by the dean concerned.

(2) Officer candidate and special service training not strictly organized as college courses, and other formal or informal off-duty training. Credit may be allowed toward advanced standing by the dean after review by the Registrar and the dean concerned of the official separation record and, as required, after passing with satisfactory scores or grades any field or subject examinations given through the Armed Forces Institute or by the department concerned. Credit for college level General Educational Development Tests is allowed as approved by the dean concerned, except that no credit is allowed in English.

(3) Correspondence courses. Credit may be allowed for college level courses completed by correspondence through the Armed Forces Institute, institutions approved by the Armed Forces Institute, and other accredited institutions as approved by the dean concerned.

(4) Veterans eligible to attend under the G.I. Bill of Rights, the Korean War Bill, or Cold War GI Bill will be excused from Basic ROTC training not previously completed and will be allowed college credit as follows:

Commissioned Officers - 24 Quarter Hours

Others - 6 Quarter Hours

(Duplicate credit is not allowed where ROTC courses have been completed prior to military service.)

Students who have completed a six-months Reserve Active Duty for Training Program (ACDUTRA) resulting in an honorable separation and who have not completed Basic ROTC requirements prior to military service may be given college credit for three quarters (usually the first year) of the ROTC Basic Course. No college credit will be awarded if the Reserve Active Duty for Training Program was less than six months duration; however, the student will be excused from attending three quarters of Basic ROTC training. Other students who have completed terms of military service resulting in an honorable separation, will be given college credit as follows:

For 6 to 12 months - Three quarters of the ROTC Basic Course (three quarter hours) usually taken in the first year.

12 months or more - The entire Basic ROTC Course (6 quarter hours).

Any student who is interested in the Advanced Course offered by the Departments of Air, Military, or Naval Science shall complete as much of the Basic ROTC Course as may be prescribed as prerequisite by the Department concerned, or complete a summer basic training period in lieu of the two-year ROTC program required for freshmen and sophomores. Ap-

plication for the Navy's Advanced Contract NROTC program should be made to the Professor of Naval Science in January or February of the year the student plans to enter.

(5) The Basic ROTC requirement will be waived for successful completion of the training required to become a federally recognized officer in the National Guard of any state. A total of six quarter hours of credit will be allowed, including any Basic ROTC credit earned in residence.

(6) Students who have had active military service may receive credit in physical education as follows: for less than six months, no credit; for six months to one year, one quarter hour in Functional Physical Education, PE 100; for more than one year, six quarter hours (less any completed prior to military service).

Examinations And Grades

Grading System

Final grades are assigned as follows: A, Superior; B, Good; C, Acceptable; D, Passing; S, Satisfactory; F, Failure. Grade points are assigned as follows: A - 3; B - 2; C - 1; D - 0; F - 0. For graduate students see Graduate School section.

A grade of "Incomplete" (IN) is assigned when the quality of work has been of passing grade, but the student has been prevented by illness or other justifiable cause from completing the work required prior to the final examination. If the student is both "Incomplete" in his work and absent from the final examination, the grade of "Absent Examination" (X) shall be assigned. When a grade of "Absent Examination" (X) is reported, the instructor shall indicate whether or not the quality of work has been of passing grade. If passing, a grade of "X" is assigned; if not passing, the grade shall be "XF." Grades of "Incomplete" and "Absent Examination" in required subjects not cleared within one resident quarter shall be repeated. Graduating seniors must clear all incompletes (IN) and absent examination (X) within the first two (2) weeks of their graduating quarter. Graduate students shall remove incomplete grades within a reasonable time and will not be allowed to graduate with grades of "Incomplete" on their records. A student absent from a final examination for any reason other than personal illness must obtain an excuse from the respective Dean in order to take the examination.

A grade of "Withdrawn" (W) will be assigned when the student drops a course with the permission of the dean within the first two weeks of a quarter, or when he is permitted for special reasons to drop the course without penalty after this period. A grade of "Withdrawn Failing" (WF) is assigned to a course dropped with penalty.

If a student is dropped for excessive absences, a grade of "FA" is assigned.

Examinations and Reports

Examinations are classified as (1) final examinations at the end of each quarter and (2) special examinations. Grades in all subjects are reported to the students' parents or guardians at the end of each quarter. Fees for special examinations are found on page 30. A student absent from an examination for any reason other than personal illness must obtain an excuse from the respective Dean in order to take the examination. Examinations missed because of illness must be excused by the University Physician.

For detailed regulations governing special examinations, see "Rules and Regulations for Students" in The Tiger Cub, the student handbook.

Announced Quizzes. At least two announced one-hour quizzes shall be held in each subject during the quarter, one in the first half of the quarter and the other in the last half. Other quizzes may be given as deemed necessary by the instructor and department head.

Re-admission of Former Students. Students who have attended Auburn University and desire to re-enter must secure a registration permit from the Registrar's Office. Students who have attended another institution for one (1) quarter or semester must be eligible to re-enter the institution attended. Students attending another institution for more than one (1) quarter or semester must have earned an overall "C" average to be eligible to re-enter Auburn University.

Mid-Quarter Deficiencies. Deficiencies are reported at the end of the fifth week in each quarter.

Dean's List

A full-time student (minimum of 15 quarter hours) passing all credit hours of work carried during a quarter and attaining a scholastic record within the upper five per cent of the records attained by the full-time students enrolled in his school may be designated an honor student for that quarter. The honor attained will be recorded on the Dean's List and on the student's permanent record.

Academic Eligibility

Continued Residence

Auburn University may place a student on probation or suspend him at any time if he flagrantly neglects his academic work or makes unsatisfactory progress toward graduation.

Academic Probation

Any student enrolled at Auburn University will be placed on academic probation whenever the total number of hours he has attempted at Auburn University exceeds total grade points earned by more than 12, except that no entering freshman will be placed on academic probation on the basis of his first quarter's work at Auburn.

Clearing Probation

A student may clear a probation by reducing his grade point deficiency to 12 or fewer grade points.

Academic Suspension

A student on probation will be placed on academic suspension for two quarters whenever the number of hours he has attempted at Auburn University exceeds grade points earned by more than 21. However, such a student will not be placed on academic suspension at the end of a quarter in which he earns a 1.0 (C) average, but he will be continued on academic probation.

A student's first academic suspension will be for a period of two quarters, summer quarter being counted as any other quarter. A student will be re-admitted on academic probation following the expiration of his first suspension. A student who incurs a second academic suspension is placed on indefinite suspension and can be re-admitted only on special approval by the Admissions Committee on the basis of adequate evidence of ability, maturity and motivation. Generally, a student must be on indefinite suspension at least four quarters before his application for re-admission will be considered.

A student whose eligibility to register cannot be determined because of deferred grades may be permitted to register conditionally until his status is determined. Conditional grades must be cleared within two weeks of the beginning of the quarter.

No credit earned at another institution by a student on academic suspension from Auburn will be used in clearing a suspension nor in meeting requirements for an Auburn University degree.

Suspensions incurred prior to implementation of the above regulations shall not be counted when determining a student's academic status.

Students enrolled in the School of Veterinary Medicine who fail to make a grade point average of 1.25 in any quarter will be placed on academic probation. Students on academic probation who fail to make a 1.25 in the following quarter may be dropped from the School of Veterinary Medicine. Students who make a grade of F on any course may be required to withdraw from the School of Veterinary Medicine. If re-admitted such students may be required to repeat certain other courses in the curriculum for that quarter.

Students who are dropped under the above provisions are eligible for admission to other curricula provided they meet the general scholastic requirements for continuance in college. The scholastic penalties incurred while enrolled in the School of Veterinary Medicine will become a part of the student's record.

Degree Requirements

To qualify for graduation, a student must complete the courses and hours specifically required and accepted for his curriculum with a grade point average of 1.0 (C). A student who transfers from another institution must earn grade points equal in number to the additional hours required for completion of the curriculum. If courses by correspondence and extension are accepted, the number of grade points allowed will not exceed the number of credit hours so completed.

Not more than 10 quarter hours of the final year's work may be obtained through extension or correspondence courses, or both, unless the student has completed a full load in residence previously for one full session of 36 weeks, in which case credit will be allowed for a total of 18 quarter hours in either extension or correspondence, or a combination of the two. All credit hours earned by correspondence or extension will be counted as any other credit hours earned toward meeting graduation requirements but will not be included in the calculation for continuation in residence.

Degrees are conferred at Commencement Exercises held at the close of each quarter. A degree will not be conferred in absentia without official permission of the student's dean.

The graduation fee (page 31) must be paid at the beginning of the quarter of graduation at the Bursar's Office.

No student will be issued a diploma or statement of credits if he is in default on any payment due the University or any school or division thereof.

Residence Requirement. To obtain a bachelor's degree a student must complete the final year of work at Auburn University. This regulation may be waived, at the discretion of the dean, for men who entered military service from Auburn University and completed work while on active duty. A student must be enrolled in the specified curriculum of graduation for 3 quarters and complete the hour requirement for the last year of work.

Second Degree. A minimum of 45 quarter hours and 45 grade points and 36 weeks of residence is required for a second baccalaureate degree by a graduate of Auburn University. The minimum requirements for a second baccalaureate degree for a graduate of another institution are completion of the hours required in the final year of the curriculum with an equal number of grade points and 36 weeks of residence at this institution. A minimum of 45 quarter hours and 36 weeks of residence is required for a master's degree.

Graduation Honors

Students clearing graduation requirements with exceptionally high scholastic records who have completed in residence at Auburn University not less than six quarters of the work required in their curricula are graduated with distinction. The distinction attained will be recorded on the student's diploma and placed on his permanent record.

A transfer student who has completed at least six quarters of work in residence at Auburn University is eligible for graduation honors if he meets both of the following requirements: (1) his grade point quotient on all work taken in residence at Auburn University meets the minimum requirements for the honor and (2) his over-all grade point quotient on all work taken in residence at Auburn University and elsewhere meets the minimum requirements for the honor.

A transfer student may not be graduated with a degree of distinction higher than that for which he would be eligible on the basis of his Auburn University record, and where his over-all average is lower than his Auburn University record, the degree of distinction earned will be determined by his over-all grade point quotient.

A student whose record at Auburn University fails to meet the requirements established for one of the degrees of distinction may not be graduated with honors regardless of his record elsewhere.

In determining graduation honors, all work attempted in residence except remedial subjects and subjects cleared with the "S" (satisfactory) grade, will be used in the calculations. Where transfer credits are considered, calculations will be based on the grade point values in use at Auburn University.

The grades of distinction and requirements are: With Honor, a grade point quotient of at least 2.4; With High Honor, a grade point quotient of at least 2.6; and With Highest Honor, a grade point quotient of at least 2.8.

Special Regulations

For complete information regarding all Special Regulations, see "Rules and Regulations for Students" in *The Tiger Cub*, the student handbook.

Automobile Registration

Registration of four-wheel motor vehicles will be a part of the academic registration procedure at the beginning of the Fall Quarter each year for all undergraduate and graduate students that are permitted to bring cars to Auburn and will be part of the registration procedure at the beginning of the Winter, Spring and Summer Quarters for all students not already registered.

Students who bring unregistered cars, scooters or motorcycles on the campus after any registration period must register them at the University Security Office, Department of Buildings and Grounds, immediately after arrival on the campus. Faculty and staff members shall register their cars at the University Security Office. Failure to register a four-wheel vehicle, to use the proper decal and to park in the proper zone will constitute a violation and subject the violator to certain penalties.

Freshmen are not permitted to bring cars to the Auburn community unless required for commuting. Generally, those staying or living one-half mile or further beyond the edge of the main campus will be considered commuters.

Junior, Sophomore and Freshman commuters must register for zone "D" and are not permitted to park or operate a vehicle on the main campus during normal school hours.

The above is general information subject to modification by the beginning of the Fall Quarter, 1968. For specific up-to-date information regarding designated parking area, traffic regulations and controls, violations and penalties, secure a copy of the "Parking and Traffic Regulations" from the University Security Office.

Discipline

1. Each student, by act of registration, obligates himself to obey all rules and regulations.
2. Students are expected to conduct themselves along the lines of good citizenship by obeying the laws of the United States, the State of Alabama, the City of Auburn, and the University. Enrollment as a student in no way exempts any person from penalty in case of violation of local, state, or national laws. (See Student Handbook for detailed regulations relative to discipline.)
3. All publications supported by the Student Activities Fee are subject to supervision by the Board of Student Publications.

School of Agriculture

E. V. SMITH, *Dean*

CHARLES F. SIMMONS, *Associate Dean*

R. D. ROUSE, *Assistant Dean*

THE SCHOOL OF AGRICULTURE prepares students for careers in agriculture and related professions. Courses provide a broad foundation in the basic sciences, a general knowledge of the applied sciences, and a reasonable number of cultural subjects. Most of the basic science courses are given in the freshman and sophomore years and serve as a basis for a better understanding of the applied or more practical subjects which are usually taken in the junior and senior years.

A curriculum is offered in Agricultural Science with majors in Agronomy and Soils, Animal Science, Dairy Science, Poultry Science, Horticulture, and Agricultural Journalism. Other curricula are offered in Agricultural Business and Economics; Agricultural Engineering; Biological Sciences, with majors in Botany, Fisheries Management, Wildlife Management, Entomology, Zoology, and Marine Biology; Food Science; Forest Management; Ornamental Horticulture; and Wood Technology. If a student is permitted to major in a field where the courses are not prescribed in the catalog he should consult with the head of the department concerned.

The School of Agriculture also furnishes the subject matter training in Agriculture for the curriculum for training teachers of Vocational Agriculture.

Transfer credit will not normally be allowed for any course passed with a grade lower than C at any other college or university.

Credit will not be allowed for agricultural subjects taken at non-land-grant colleges unless the student passes validating examinations in such subjects after entering Auburn. Arrangements for these examinations must be made with the Dean of Agriculture in the first quarter of the student's enrollment in the School of Agriculture at Auburn and the examinations must be completed before the middle of the second quarter.

Curriculum in Agricultural Science (AG)

FRESHMAN YEAR

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
CH 103 Gen. Chemistry 4	CH 104 Gen. Chemistry 4	EH 102 English Comp. 5
CH 103L Gen. Chem. Lab. .. 1	CH 104L Gen. Chem. Lab. .. 1	*MH 161 Anal. Geo. and Calculus 5
HY 107 United States History** 5	EH 101 English Comp. 5	ZY 102 Gen. Zoology 5
*MH 160 Alg. and Trig. 5	ZY 101 Gen. Zoology 5	MS Military Training 1
MS Military Training 1	MS Military Training 1	PE Physical Education .. 1
PE Physical Education .. 1	PE Physical Education .. 1	Physical Education .. 1

* Credit toward a degree in any curriculum in The School of Agriculture will not be allowed for a mathematics course at a level lower than that specified in the curriculum. However, students who are not prepared to take the prescribed courses may take a lower level course without degree credit.

** HY 106 may be taken in lieu of HY 107.

*School of Agriculture***SOPHOMORE YEAR**

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
AH 200	Intr. An. Husb. ....5	AS 202	Agr. Economics ....5	AH 204	Animal Biochemistry and Nutrition .....5
BY 101	General Botany .....5	BY 102	General Botany .....5	AY 201	Grain Crops .....5
PS 204	Physics .....5	CH 207	Organic Chemistry ..5	HF 201	Orchard Mgt. .....5
MS	Military Training ...1	MS	Military Training ...1	MS	Military Training ...1
PE	Physical Education ..1	PE	Physical Education ..1	PE	Physical Education ..1

JUNIOR YEAR

PH 301	General Poultry .....5	BY 306	Plant Physiology .....5	AY 304	General Soils .....5
SP 210	Public Speaking .....3	BY 309	Plant Pathology .....5	HF 308	Vegetable Crops .....5
JM 315	Agr. Journalism .....3	DH 200	Fund. of Dairying ..5	*Agr. Engr. Elective 5	
*Agr. Engr. Electives 5	Elective .....3	Elective .....3	Elective .....3	Elective .....3	

SENIOR YEAR

AY 401	Forage Crops .....5	AS 301	Agr. Marketing .....5	AH 401	Swine Production .....5
FY 313	Farm Forestry .....5	AY 404	Cotton Production ..5	AS 401	Farm Management .....5
Elective .....5	Elective .....5	Elective .....5	Elective .....5	ZY 402	Econ. Entomology ..5
Elective .....3	Elective .....3	Elective .....3	Elective .....3		

Total—211 quarter hours

* To be selected from AN 350, 351, 352 and 353.

Major in Agronomy and Soils**FRESHMAN YEAR**

(Same as in Agricultural Science except Botany 101 will be substituted for Zoology 102)

SOPHOMORE YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
AY 201	Grain Crops .....5	AH 204	Animal Biochemistry and Nutrition .....5	AH 200	Introductory Animal Husbandry .....5
BY 102	General Botany .....5	CH 105	General Chemistry ..3	AY 304	General Soils .....5
CH 203	Organic Chemistry ..5	CH 105L	Gen. Chem. Lab. ..2	DH 200	Fund. of Dairying ..5
MS	Military Training ...1	FS 204	Physics .....5	MS	Military Training ...1
PE	Physical Education ..1	MS	Military Training ...1	PE	Physical Education ..1
		PE	Physical Education ..1		

JUNIOR YEAR

AN 350	Soil & Water Technology .....5	AY 406	Com. Fertilizers .....3	AY 306	Soil Morphology & Survey .....5
AS 202	Agr. Economics .....5	HF 308	Vegetable Crops .....5	JM 315	Agr. Journalism .....3
BY 306	Fundamentals of Plant Physiology .....5	PH 301	General Poultry .....5	*Electives .....11	
	Elective .....3	SP 210	Public Speaking .....3		
		Elective .....3			

SENIOR YEAR

AS 401	Farm Management ..5	AY 404	Cotton Production ..5	AY 402	Soil Fertility .....5
AY 401	Forage Crops .....5	BY 309	Plant Pathology .....5	ZY 402	Econ. Entomology ..5
FY 313	Farm Forestry .....5	Electives .....8	Electives .....8	ZY 300	Genetics .....5
Elective .....3	Elective .....3			Elective .....3	

Total—212 quarter hours

* The student must take at least 5 hours from AN 351, 352, 353, and 354.

Students planning to major in Agronomy and Soils should contact the Head of the Department and be assigned an adviser. Electives will be selected with approval of the adviser and the Dean in line with the student's interests and needs. Students desiring further training may plan their course of study so as to be prepared for graduate work at this or other institutions.

Major in Animal Science

FIRST QUARTER		FRESHMAN YEAR		THIRD QUARTER	
		SECOND QUARTER			
AH 200	Intr. An. Husb.	CH 104	Gen. Chemistry	CH 105	Gen. Chemistry
CH 103	Gen. Chemistry	CH 104L	Gen. Chem. Lab.	CH 105L	Gen. Chem. Lab.
CH 103L	Gen. Chem. Lab.	EH 101	English Comp.	EH 102	English Comp.
MH 160	Alg. and Trig.	MH 161	Anal. Geom. and Calculus	ZY 101	Gen. Zoology
MS	Military Training	MS	Military Training	MS	Military Training
PE	Physical Education ..1	PE	Physical Education ..1	PE	Physical Education ..1
SOPHOMORE YEAR					
CH 203	Organic Chem. or CH 207	BY 101	Gen. Botany	AH 204	Animal Biochemistry & Nutrition
Organic Chemistry	....5	VM 200	Gen. Microbiology	AS 202	Agr. Economics
PO 206	United States Govt.	JM 315	Agri. Journalism	AY 304	General Soils
ZY 102	Gen. Zoology	SP 210	Public Speaking	MS	Military Training
MS	Military Training	MS	Military Training	PE	Physical Education ..1
PE	Physical Education ..1	PE	Physical Education ..1		
JUNIOR YEAR					
ZY 300	Genetics	AH 403	Animal Breeding	VM 422	Animal Diseases
Electives	.....13	VM 421	Animal Physiology	ZY 402	Economic Ento.
		Electives	.....8	Electives	.....8
SENIOR YEAR					
Electives	.....18	AH 411	Seminar	Electives	.....18
		AS 401	Farm Management		
		Electives	.....13		

Total—212 quarter hours

Students desiring to major in Animal Science will be assigned an adviser. A major may elect either a Terminal Degree Option or a Graduate Preparatory Option and will during his sophomore year with the assistance and approval of his adviser, develop a plan of study for the junior and senior years from lists of approved elective courses. As approved by the Dean of Agriculture and the student's adviser, substitutions may be permitted to meet specific needs of individual students.

Major in Dairy Science

FIRST QUARTER		FRESHMAN YEAR (Same as in Agricultural Science)		THIRD QUARTER	
		SECOND QUARTER			
CH 105	General Chemistry	AS 202	Agr. Economics	AH 204	Animal Biochemistry and Nutrition
CH 105L	Gen. Chem. Lab.	BY 101	General Botany	AY 201	Grain Crops
DH 200	Fund. of Dairying	CH 203 or 207	Organic Chemistry*	**Agr. Engr. Elective	5
PS 204	Physics	MS	Military Training	MS	Military Training
LY 101	Use of the Library ..1	PE	Physical Education ..1	PE	Physical Education ..1
MS	Military Training				
PE	Physical Education ..1				
SOPHOMORE YEAR					
AY 304	General Soils	AY 401	Forage Crops	EH 345	Bus. & Prof. Writing 5
VM 200	Gen. Microbiology	DH 410	Food Microbiology	VM 422	Animal Disease Control
DH 314	D. C. Judging	VM 421	Animal Physiology	ZY 300	Genetics
JM 315	Agr. Journalism	SP 210	Pub. Speaking***	Elective	.....3
Elective	.....3				
JUNIOR YEAR					
DH 408	Processing Dairy Products	AH 403	Animal Breeding	AS 401	Farm Management
DH 317	Dairy Cattle Feeding & Mgt.	PH 301	General Poultry	DH 403	Dairy Farm Prac.
**Agr. Engr. Elective	5	DH 402	Artificial Insemination	ZY 402	Econ. Entomology
Elective	.....3	Elective****	.....5	Elective	.....3
SENIOR YEAR					

Total—212 quarter hours

Students majoring in Dairy Production shall have at least one quarter or one summer practical dairy farm experience before graduation.

* If graduate study is planned, CH 207 is recommended, with CH 208 also to be taken as an elective.

** To be selected from AN 350, 351, 352, and 353.

*** Students taking Advanced ROTC may substitute one 3-hour Advanced ROTC course for SP 210.

**** If graduate study is planned, CH 206 and CH 206L Quantitative Analysis should be taken.

Major in Horticulture**FRESHMAN YEAR**

(Same as in Agricultural Science except Botany 101 will be substituted for Zoology 102)

SOPHOMORE YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
BY 102 General Botany	5	AS 202 Agr. Economics	5	AH 204 Animal Biochemistry	5
HF 201 Orchard Mgt.	5	CH 207 Organic Chemistry	5	and Nutrition	5
PS 204 Physics	5	HF 224 Plant Propagation	5	*AN 351 Agr. Mach. Tech.	5
MS Military Training	1	MS Military Training	1	HF 221 Landscape	
PE Physical Education	1	PE Physical Education	1	Gardening	5

JUNIOR YEAR

BY 306 Plant Physiology	5	AS 301 Agr. Marketing	5	AN 350 Soil and Water	
PH 301 General Poultry	5	AY 304 General Soils	5	Technology	5
JM 315 Agr. Journalism	3	HF 308 Vegetable Crops	5	AY 402 Soil Fertility	5
SP 210 Public Speaking	3	Elective	3	HF 402 Storage, Packaging	
Elective	3			and Marketing	
				Veg. Crops	3
				Elective	5

SENIOR YEAR

AS 401 Farm Management	5	BY 309 Plant Pathology	5	HF 405 Small Fruits	5
HF 401 Commercial Veg. Crops	3	HF 404 Fruit Growing	5	ZY 402 Economic Ento.	5
HF 323 Floriculture or		Electives	8	Electives	8
HF 406 Nut Culture	5				
Elective	5				

Total—211 quarter hours

Electives will be chosen with the approval of the student's adviser and dean.

* AN 352, AN 353 or AN 354 may be substituted.

Major in Poultry Science**FRESHMAN YEAR**

(Same as in Agricultural Science)

SOPHOMORE YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
AS 202 Agr. Economics	5	EC 212 Intr. Accounting	5	AH 204 Animal Biochemistry	
BY 101 General Botany	5	PH 301 General Poultry	5	and Nutrition	5
EC 211 Intr. Accounting	5	PH 204 Physics	5	GY 103 Economic Geog.	5
MS Military Training	1	MS Military Training	1	ZY 300 Genetics	5
PE Physical Education	1	PE Physical Education	1	MS Military Training	1

JUNIOR YEAR

EC 341 Business Law	5	AS 301 Agr. Marketing	5	AS 361 Rural Sociology	5
SP 211 Public Speaking	5	VM 311 Gen. Bacteriology	5	EH 345 Bus. & Prof. Writing	5
JM 315 Agr. Journalism	3	Electives	8	PG 211 Gen. Psychology	5
Elective	6			Elective	3

SENIOR YEAR

EC 333 Salesmanship	3	PH 408 Poultry Diseases	5	AS 401 Farm Management	5
ZY 411 General Parasitology or		AN 353 Farm Building Tech.	5	PH 404 Poultry Management	5
ZY 402 Econ. Entomology	5	AS 304 Agr. Finance	3	PH 410 Poultry Breeding	3
PH 302 Poultry Meat Prod.	3	Elective	6	PH 411 Poultry Marketing	3
PH 405 Poultry Feeding	3			Elective	3
Elective	3				

Total—212 quarter hours

Electives to be approved by student's adviser and dean.

Agricultural Business and Economics

The curriculum in Agricultural Business and Economics is for both those students who plan a career in business closely related to agriculture, and for those interested in the economics of agricultural production and marketing and in public policies affecting agriculture. The curriculum is administered through a faculty advisory system wherein individual student programs of study are developed in accordance with individual student needs and interests. The need for broad training, rather than narrow specialization, is emphasized.

The curriculum not only combines both business and technical agricultural courses, but through selection of electives it provides an opportunity for students to emphasize training in agribusiness, in agricultural economics, in humanities, or in selected production fields. The curriculum leads to a degree of Bachelor of Science in Agricultural Business and Economics.

The demand for graduates who have both business and applied agricultural training is increasing. In both public and private agencies, increasing attention to rural economic and social problems points to enlarged opportunities for qualified workers in teaching, research, sales, public relations, services, administration, and private employment in these fields. By properly selecting electives, students may prepare themselves to become (1) owners or managers of firms that produce, process, or market agricultural products; (2) teachers, research workers, or educational workers in the field; (3) public officials in the capacity of farm management or marketing specialists, commodity analysts, market news reporters, inspectors, credit analysts, etc.; or (4) employees of business firms that handle agricultural products or that service agricultural production and marketing firms.

Curriculum in Agricultural Business and Economics (AS)

FRESHMAN YEAR		
FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
EH 101 English Comp. ....5 MH 160 Algebra & Trig. ....5 ZY 101 Gen. Zoology ....5 MS Military Training ..1 PE Physical Education ..1	EH 102 English Comp. ....5 CH 103 Gen. Chemistry ....4 CH 103L Gen. Chem. Lab. ..1 MH 161 Anal. Geo. & Cal. ....5 AS 102 Agr. Econ. Orien. ..0 MS Military Training ..1 PE Physical Education ..1	BY 101 Gen. Botany .....5 CH 104 Gen. Chemistry ....4 CH 104L Gen. Chem. Lab. ..1 HY 107 U.S. History* .....5 LY 101 Use of Library .....1 MS Military Training ..1 PE Physical Education ..1
SOPHOMORE YEAR		
AH 204 Animal Biochemistry and Nutrition .....5 AS 202 Agr. Economics ....5 EC 211 Intr. Accounting ....5 MS Military Training ..1 PE Physical Education ..1	EC 212 Intr. Accounting ....5 DH 200 Fund. of Dairy or PH 301 Gen. Poultry .....5 PS 204 Physics .....5 MS Military Training ..1 PE Physical Education ..1	EC 341 Business Law .....5 EC 245 Statistics .....5 PO 206 U.S. Govt. .....5 MS Military Training ..1 PE Physical Education ..1
JUNIOR YEAR		
AH 303 Livestock Prod. ....5 AY 307 General Soils .....5 EC 360 Money & Banking ..5 Elective .....3	AS 301 Agr. Marketing .....5 AS 361 Rural Sociology .....5 SP 210 Public Speaking .....3 Electives .....6	AN 351 Farm Machinery Tech. or** .....5 EH 345 Bus. & Prof. Writ. ..5 Elective .....8
SENIOR YEAR		
EC 446 Business Cycles ....5 AS 410 Agr. Bus. Mgt. ....3 Electives .....10	AY 401 Forage Crops or AY 201 Grain Crops .....5 FY 313 Farm Forestry .....5 AS 403 Agr. Prices .....3 AS 490 Senior Seminar .....1 Elective .....3	AS 401 Farm Mgt. .....5 AS 405 Agr. Policy .....3 Electives .....10

Total—211 quarter hours

* HY 106 may be taken in lieu of HY 107.

** Or other Agricultural Engineering courses from those listed in recommended electives.

SUGGESTED TECHNICAL ELECTIVES

CE 304 Theory of Structures	5	ME 428 Air Conditioning and Refrigeration	4
CE 305 Water Supply	5	ME 441 Engineering Systems I	4
CE 402 Indeterminate Structures	5	ME 442 Engineering Systems II	4
CE 404 Reinforced Concrete	5	ME 443 Photoelastic Stress and Strain Analysis	4
CE 418 Soil Mechanics	5	MH 403 Engineering Mathematics II	5
CN 440 Nuclear Engineering	5	MH 404 Engineering Mathematics III	5
IE 303 Engineering Statistics I	4	MH 460 Numerical Analysis I	5
IE 320 Engineering Economy	5	PS 305 Introduction to Modern Physics	5
IE 301 Elect. Data Proc. and Comp. Programming	5	PS 413 Introduction to X-Ray Crystallography	5

RECOMMENDED ELECTIVES

GROUP 1	GROUP 2	GROUP 3
AH 302 Feeds & Feeding	AS 302 Farm Records	AS 441 History & Philosophy of Extension
AH 304 Meats	AS 303 Agricultural Coop.	AS 462 Rural Communities Around the World
AH 401 Swine Production	AS 304 Agr. Finance	IE 314 Elec. Data Processing Mach.
AH 402 Beef Cattle Prod.	AS 305 Farm Appraisal	PA 301 Philosophy
*AN 350 Soil & Water Tech.	AS 411 Econ. Development	PA 302 Ethics
AN 351 Agr. Machinery Tech.	AS 412 Economic Aspects of Water	PA 308 Introduction to Logic or
*AN 352 Tractor & Engine Tech.	AS 460 Intr. to Economics	PA 307 Scientific Rsn'g.
*AN 353 Farm Bldg. Tech.	EC 333 Salesmanship	PG 211 General Psychology
*AN 354 Agr. Proces. Tech.	EC 451 Intr. Ec. Theory	PG 330 Social Psychology
AY 404 Cotton Production	EC 452 Comp. Econ. Systems	PG 360 Applied Psychology
AY 406 Comm. Fert.	EC 463 Corporate Finance	PO 407 Political Sci.
AY 407 Soil Management	EC 464 Investments	SY 203 Cultural Anthropology
HF 401 Comm. Veg. Crops	EC 465 Public Finance	SY 311 Tech. & Soc. Chg.
HF 404 Fruit Growing	EC 474 Adv. Statistics	SY 408 Indus. Socio.
		ZY 204 Insects
		ZY 206 Conservation
		ZY 300 Genetics
		ZY 402 Econ. Entomology

Students desiring to major in Agricultural Business and Economics should contact the Head of the Department of Agricultural Economics and Rural Sociology as early in their college careers as possible in order that they may be assigned to a faculty adviser. Electives will be selected in consultation with faculty advisers based on student needs and interests.

Agricultural Engineering

This technical field trains engineers in the agricultural areas. The curriculum includes courses basic to all types of engineering, courses with particular emphasis on engineering problems in agriculture, and general agricultural courses. The curriculum leads to a degree of Bachelor of Science in Agricultural Engineering. Students completing the curriculum have opportunities in many types of work where both engineering and agricultural knowledge are required.

The Agricultural Engineering curriculum is accredited by the Engineers' Council for Professional Development.

Curriculum in Agricultural Engineering (AN)

FRESHMAN YEAR**FIRST QUARTER**

	FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
EH 101 English Comp.	5	CH 103 Gen. Chemistry	4
MH 161 Anal. Geo. & Cal.	5	CH 103L Gen. Chem. Lab.	1
ZY 101 General Zoology	5	EH 102 English Comp.	5
EG 102 Engr. Drawing I	2	MH 162 Anal. Geo. & Cal.	5
MS Military Training	1	LY 101 Use of Library	1
PE Physical Education	1	AN 101 Engineering & Agr.	1
		MS Military Training	1
		PE Physical Education	1

SOPHOMORE YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
AN 201	Soil & Implement Mechanics	ME 205	Applied Mechanics	AS 202	Ag. Economics
MH 264	Anal. Geom. & Cal.	MH 361	Diff. Equations	PS 203	Gen. Physics III
PS 201	Gen. Physics I	PS 202	Gen. Physics II	ME 208	Strength of Mat.
PA 202	Ethics & Society	CE 210	Engr. Surveying	AN 205	Ag. Engr. Design
MS	Military Training	MS	Military Training	MS	Military Training
PE	Physical Education	PE	Physical Education	PE	Physical Education
JUNIOR YEAR					
AN 407	Agr. Mech. Design Analysis	ME 307	Applied Mech. Dynam.	AY 307	Gen. Soils
EE 304	Electrical Circuits	ME 310	Thermodynamics	CE 308	Technical Elective
AN 302	Agr. Structures Des. I	AN 307	Physical Properties of Agricultural Materials	Agriculture Elective	
EH 304	Technical Writing Humanistic or Social Elective	AN 309	Electrical Systems in Agriculture		
		HY 204	History of Modern World		
SENIOR YEAR					
AN 403	Soil & Water Eng.	AN 401	Mech. of Tractor Power	AN 405	Irrigation Design
EE 305	Elect. & Instrum. Agriculture Electives	AN 416	Agr. Structures Des. II	AN 408	Agr. Tractor Design Analysis
		AN 409	Agr. Processing Humanistic or Social Elective	SP 210	Public Speaking
		CE 309	Hydraulics II		Humanistic or Social Elective

Total—228 quarter hours

ELECTIVES

Courses used for electives must be selected from the list of technical and humanistic-social electives that follows, subject to approval of the Department Head.

Six hours of Advanced ROTC may be substituted for SP 210 Public Speaking and EH 304 Technical Writing.

Requirements for agricultural electives may be met by taking 15 hours from the following: AY 455 Soil Physics, BY 401 Experimental Statistics for Biological Sciences, BY 306 Fundamentals of Plant Physiology, AS 401 Farm Management, ZY 402 Economic Entomology, AY 402 Soil Fertility, AH 204 Animal Biochemistry and Nutrition.

APPROVED HUMANISTIC-SOCIAL ELECTIVES

HISTORY AND GOVERNMENT		MU 373	Appreciation of Music	3
HY 204	Hist. of the Modern World	MU 374	Masterpieces of Music	3
HY 207 or 208	World History			
HY 314	United States Colonial History			
HY 315	International Organization			
HY 322	The U.S. in World Affairs			
HY 371	History of the West			
HY 460	Great Leaders of History			
HY 482	History of the South			
HY	Current Events			
PO 206	United States Government			

LITERATURE

EH 208	Literature of the Western World	3	SY 201	Introduction to Sociology	5
EH 320	An Introduction to Drama	3	SY 204	Social Behavior	5
EH 350	Shakespeare's Greatest Plays	3	SY 307	The Court and Penal Administration	3
EH 355	Masterpieces of World Literature	3	SY 311	Technology and Social Change	3
EH 365	Southern Literature	3	SY 403	Regional Sociology	5
EH 381	The Literature of the Age of Reason	3			
EH 385	The Impact of Science and Technology Upon Modern Literature	3			
SP 310	Great American Speeches	3			

THE ARTS

AT 332	American Painting and Sculpture	3	PG 211	General Psychology	5
AT 431	Contemporary Art	3	PG 311	Behavior of Man	3
AR 360	Appreciation of Architecture	3	PG 461	Industrial Psychology	5
DR 313	Drama Appreciation I	3			
DR 314	Drama Appreciation II	3			

PSYCHOLOGY

PA 301	Introduction to Philosophy	3
PA 302	Introduction to Ethics	3
PA 330	Philosophy of Religion	5
PA 307	Scientific Reasoning	5
PA 308	Introduction to Logic	3
PA 440	American Philosophy	5

Curriculum in Biological Sciences (BI)**Major in Botany****FRESHMAN YEAR**

(Same as in Agricultural Science except that BY 101 and 102 will be taken in place of ZY 101 and 102.)

SOPHOMORE YEAR

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
ZY 101 General Zoology .....5	ZY 102 General Zoology .....5	AS 202 Agr. Economics .....5
CH 105 Gen. Chemistry .....3	CH 207 Organic Chem. .....5	EH 253 Lit. in English .....5
CH 105L Gen. Chem. Lab. ..2	PS 206 Intr. Physics .....5	Elective .....5
PS 205 Intr. Physics .....5	MS Military Training ...1	MS Military Training ...1
MS Military Training ...1	PE Physical Education ..1	PE Physical Education ..1
PE Physical Education ..1		

JUNIOR YEAR

EH 390 Adv. Composition ..5	AY 304 General Soils .....5	BY 306 Fund. Plant Physiology .....5
VM 200 Gen. Microbiology ..5	BY 309 Gen. Plant Pathology .....5	ZY 304 Gen. Entomology ..5
Elective .....5	Electives .....8	Electives .....8
SP 210 Public Speaking ..3		
BY 413 Gen. Pl. Ecology .....5	BY 415 Plant Anatomy .....5	BY 406 Systematic Botany ..5
FL 121 Elem. French or	FL 122 Elem. French or	Electives .....13
FL 151 Elem. German .....5	FL 152 Elem. German .....5	
ZY 300 Genetics .....5	Electives .....8	
Elective .....3		

Total—210 quarter hours

Students desiring to major in Botany will be assigned an adviser. A major will, during the sophomore year, with the assistance and approval of the adviser develop a plan of study for the junior and senior years from lists of approved elective courses. As approved by the Dean of Agriculture and the student's adviser, substitutions may be permitted to meet specific needs of individual students.

Majors in Zoological Sciences

Majors in zoological sciences are for students interested in careers in animal biology. One has the choice of four options: zoology, entomology, fisheries, or wildlife, and degrees are offered in each option.

During the first two years all students take the same subjects which emphasize the basic sciences and background courses. Thereafter, it is possible to elect courses to fit specific needs of the student in his or her option. The program during the junior and senior years is developed under the guidance of a faculty adviser who works closely with the student. During this period the student may wish to work toward graduate school upon graduation. The faculty adviser assists the student in developing a program of study and with other academic and personal matters throughout his four years of training. Diversified career opportunities are excellent for well-trained persons in zoological sciences, and the opportunities increase as the level of training is raised.

At the bachelor's degree level, greatest demands are for research, management, survey, and regulatory work with state or federal agencies concerned with insects, fish, wildlife, or public health; for public relations and sales work with commercial companies; for technical assistants in research laboratories; for conservation and recreational work; and for private enterprises. At the graduate degree levels, opportunities are greatly enhanced, particularly for teaching, research, and extension at the university level; for research, development, and management with industry; for research with the Public Health Service, Fish and Wildlife Service, Entomology Research Division, United States Department of Agriculture, the Atomic Energy Commission, and other research organizations; and for employment in other areas.

Zoological Sciences

Options: Entomology, Fisheries, Wildlife, Zoology

FRESHMAN YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
EH 101	English Comp. ....5	CH 103	General Chemistry ..4	BY 101	General Botany ....5
MH 160	Algebra & Trig. ....5	CH 103L	Gen. Chem. Lab. ..1	CH 104	General Chemistry ..4
ZY 101	General Zoology ....5	MH 161	Anal. Geom. & Cal. 5	CH 104L	Gen. Chem. Lab. ..1
ZY 100	Zool. Orientation ....0	ZY 102	General Zoology ....5	EH 102	English Comp. ....5
MS	Military Training ....1	MS	Military Training ....1	MS	Military Training ....1
PE	Physical Education ..1	PE	Physical Education ..1	PE	Physical Education ..1

SOPHOMORE YEAR

BY 102 General Botany ....5		CH 207 Organic Chemistry or CH 203 Organic Chem.* ....5		CH 208 Organic Chemistry or AH 204 Animal Biochemistry & Nutrition* ....5	
PS 205	Intr. Physics .....5	HY 107	U.S. History** ....5	AS 202	Agr. Economics .....5
ZY 304	Gen. Entomology ....5	PS 206	Intr. Physics .....5	ZY 300	Genetics .....5
MS	Military Training ....1	MS	Military Training ....1	MS	Military Training ....1
PE	Physical Education ..1	PE	Physical Education ..1	PE	Physical Education ..1

JUNIOR YEAR

Electives .....18	ZY 301	Comp. Anatomy ....5
	Electives	13

SENIOR YEAR

ZY 411 Parasitology .....5	ZY 401	Invert. Zoology ....5
ZY 424 Animal Physiology ..5	Electives	13
Electives .....8		

ZY 306	Principles of Animal Ecology ....5
Electives	13

Total—210 quarter hours

* For students who will not attend graduate school.

** HY 106 may be taken in lieu of HY 107.

GROUP ELECTIVES—ZOOLOGY AND ENTOMOLOGY

Students in Zoology and/or Entomology must take a minimum of 40 hours from the group electives listed below, including EH 304, SP 210, ZY 308, ZY 421 or 422, and VM 200. Other electives are free, except that all electives must be approved by the faculty adviser.

AY 304 Soils	5	ZY 302 Vertebrate Embryology	5
AY 401 Forage Crops	5	ZY 308 Micrology	5
BY 306 Fund. of Plant Physiology	5	ZY 402 Economic Entomology	5
BY 309 Plant Pathology	5	ZY 404 Medical Entomology	5
BY 401 Biological Statistics	5	ZY 405 Forest Insects	5
BY 406 Systematic Botany	5	ZY 406 Bee Culture	3
BY 413 Plant Ecology	5	ZY 407 Insect Morphology	5
EH 304 Technical Writing	3	ZY 409 Histology	5
FL 121-22 Elementary French	10	ZY 410 Systematic Entomology	5
FL 131-32 Elementary Spanish	10	ZY 418-19 Experimental Heredity	6
FL 151-52 Elementary German	10	ZY 421 Vertebrate Zoology I	5
FY 313 Farm Forestry	5	ZY 422 Vertebrate Zoology II	5
SP 210 Public Speaking	3	ZY 435 Marine Biology	3
VM 200 General Microbiology	5		

GROUP ELECTIVES—FISHERIES AND WILDLIFE

Students in Fisheries and/or Wildlife must take a minimum of 40 hours from the group electives listed below, including EH 304, SP 210, ZY 421 or 422, ZY 326 or 426, and ZY 436. Other electives are free, except that all electives must be approved by the faculty adviser.

AY 304 Soils	5	VM 200 General Microbiology	5
AY 401 Forage Crops	5	ZY 326 Wildlife Biology	5
BY 306 Fund. of Plant Physiology	5	ZY 414 Aquatic Insect Taxonomy	3
BY 401 Biological Statistics	5	ZY 415 Limnology	5
BY 406 Systematic Botany	5	ZY 418 Biological Productivity and Water Quality	3
BY 410 Aquatic Plants	5	ZY 421 Vertebrate Zoology I	5
BY 413 Plant Ecology	5	ZY 422 Vertebrate Zoology II	5
EH 304 Technical Writing	3	ZY 426 Game Management	5
FL 121-22 Elementary French	10	ZY 427 Wildlife Habitat Analysis	3
FL 131-32 Elementary Spanish	10	ZY 428 Hatchery Management	3
FL 151-52 Elementary German	10	ZY 435 Marine Biology	3
FY 201 Dendrology	3	ZY 436 Management of Small Impoundments ..	3
FY 202 Dendrology	3	ZY 437 Fisheries Biology	3
FY 203 Silvics	5	ZY 442 Marine Invertebrate Zoology	9
FY 313 Farm Forestry	5	ZY 443 Marine Vert. Zool. & Ichthyology ..	9
FY 420 Silviculture	5	ZY 444 Marine Fisheries Biology	6
FY 434 Forest Policy	3		
SP 210 Public Speaking	3		

Food Science

The Food Science curriculum is designed for those who are interested in positions in the rapidly expanding food industry. The curriculum is administered through a faculty advisory system wherein a program of study may be developed in accordance with the needs and interests of the individual student. In this manner, a student may take a general course or may specialize in a commodity area such as dairy products, meats or fruits and vegetables. He may elect a business option with supporting courses in economics and business or he may elect a sciences option.

Curriculum in Food Science (FS)

FRESHMAN YEAR		SECOND QUARTER		THIRD QUARTER	
CH 103 Gen. Chemistry	4	CH 104 Gen. Chemistry	4	CH 105 Gen. Chemistry	3
CH 103L Gen. Chem. Lab. .1		CH 104L Gen. Chem. Lab. .1		CH 105L Gen. Chem. Lab. .2	
HY 107 U.S. History*	5	EH 101 English Comp.	5	EH 102 English Comp.	5
MH 160 Algebra & Trig.	5	MH 161 Anal. Geom. & Cal. 5		ZY 101 Gen. Zoology	5
DH 101 Man's Food	1	LY 101 Library Science	1	MS Military Training	1
MS Military Training	1	MS Military Training	1	PE Physical Education	1
PE Physical Education	1	PE Physical Education	1		
SOPHOMORE YEAR					
CH 204 Anal. Chemistry	3	AS 202 Agr. Economics or		CH 208 Organic Chem.	5
CH 204L Anal. Chem. Lab. .2		EC 200 Gen. Economics	5	HE 312 Nutritional Biochem. 5	
BY 101 Gen. Botany	5	CH 207 Organic Chem.	5	VM 200 Gen. Microbiology ..5	
PS 204 Found. of Physics ..5		SP 211 Es. of Public		MS Military Training	1
MS Military Training	1	Speaking	5	PE Physical Education	1
PE Physical Education	1	MS Military Training	1		
		PE Physical Education	1		
JUNIOR YEAR					
EC 215 Fund. of Gem. &		EH 345 Bus. & Prof.		DH 410 Food Microbiology ..5	
Cost Acct.	5	Writing	5	HF 342 Ind. Food Equip.	
HF 340 Ind. Food Pres.		HF 341 Ind. Food Equip.		& Processing II	5
Technology	5	& Processing I	5	Electives	8
Electives	8	Electives	8		
SENIOR YEAR					
DH 411 Food Plant San.	3	HF 343 Food Anal. &		DH 412 Food Sc. Sem.	1
Electives	15	Qual. Control	5	Electives	18
		Electives	13		

Total—213 quarter hours

* HY 106 may be taken in lieu of HY 107.

Students taking Food Science will be assigned a Faculty Adviser on entering this curriculum. A program of study for the junior and senior years will be worked out jointly by the student and his adviser from lists of approved electives based on the needs and interests of the student.

Forestry

Two curricula are offered in forestry, one in forest management and the other in wood technology. The former leads to the degree Bachelor of Science in Forestry while the other leads to the degree Bachelor of Science in Wood Technology. The Department also offers an honors program in forest management which leads to the degree Bachelor of Science in Forestry (Honors Program).

Training in forest management and administration prepares the student as a land manager. He acquires professional knowledge and skills relating to efficient production of wood as a raw material. He studies policies, techniques and procedures whereby land may be managed for related products and services including water, wildlife and recreation. There is a strong demand

for foresters in private industry in the South. State and Federal agencies as well as consulting foresters employ a large number of graduates. The graduate may expect his initial assignments to include land line surveying, timber cruising, timber marking and land and timber purchasing. After experience is gained the graduate will assume more responsibility for land management plans and policies in his capacity as a land manager.

Wood technology is the science of making the most efficient use of the products of the tree. This includes the development of new products as well as more efficient production of standard products. The wood technologist must understand the physics and chemistry of wood as well as its anatomy and structure and must be familiar with various wood products and the methods for manufacturing them. The curriculum is sufficiently flexible that the student may specialize in chemistry, structural design, industrial management or in other fields of his choice by proper selection of his minors in these fields. The wood technologist finds employment with wood manufacturing industries and their suppliers as well as with private and public organizations which carry on research and product development for industry.

The Department of Forestry is accredited by the Society of American Foresters.

Curriculum in Forest Management (FY)

FIRST QUARTER		FRESHMAN YEAR		THIRD QUARTER	
		SECOND QUARTER			
BY 101	General Botany .....5	BY 102	General Botany .....5	MH 162	Anal. Geom. & Cal. 5
MH 160	Algebra & Trig. ....5	CH 103	General Chemistry ..4	CH 104	General Chemistry ..4
FY 101	Intr. to Forestry ...3	CH 103L	Gen. Chem. Lab. ..1	CH 104L	Gen. Chem. Lab. ..1
FY 104	Forest Cartography 2	MH 161	Anal. Geom. & Cal. 5	EH 101	English Comp. ....1
FY 105	For. Convocation*.0	LY 101	Use of Library .....1	MS	Military Training ....1
MS	Military Training ....1	MS	Military Training ....1	PE	Physical Education ..1
PE	Physical Education ..1	PE	Physical Education ..1		
SOPHOMORE YEAR					
CE 201	Surveying I .....5	AY 305	General Soils .....5	FY 203	Silvics .....5
EH 102	English Comp. ....5	PS 205	Intr. Physics .....5	AS 202	Agr. Economics ....5
FY 201	Dendrology .....3	ZY 101	General Zoology .....5	PO 206	United States Govt. 5
	Elective .....5	FY 202	Dendrology .....3	MS	Military Training ....1
MS	Military Training ....1	MS	Military Training ....1	PE	Physical Education ..1
PE	Physical Education ..1	PE	Physical Education ..1		
JUNIOR YEAR					
FY 204	For. Mensuration ....5	EC 215	Fund. Cost Acctg. ..5	BY 310	Forest Pathology ....5
FY 205	Wood Identification 5	FY 302	Forest Fire Control 3	FY 303	Forest Recreation ..3
FY 420	Silviculture .....5	FY 309	Sampling .....3	FY 310	Adv. Mensuration ..3
	Elective .....3	FY 316	Forest Economics ..3	EH 304	Technical Writing ..3
		SP 210	Public Speaking** ..3		Elective .....6
			Elective .....3		
SUMMER CAMP					
		FY 390	Field Mensuration ..5		
		FY 391	Forest Engineering ..5		
		FY 397	Forest Regeneration 3		
		FY 393	Ala. Forest Indust. 3		
		FY 396	Forest Site Evaluation .....2		
SENIOR YEAR					
FY 427	Forest Valuation ....5	FY 407	Forest Mgt. .....5	ZY 305	Forest Entomology ..5
FY 408	Logging .....3	FY 417	Photogrammetry .....5	FY 415	Range Mgt. .....2
FY 414	Reg. Silviculture ..3	FY 435	Forest Products .....5	ZY 425	For. Wildlife Mgt. ..3
FY 434	Forest Policy .....3		Merchandising .....5	FY 418	Adv. Forest Mgt. ..3
	Elective .....3		Elective .....5		Elective .....3

Total—238 quarter hours

* This course will be taken in all except Summer Quarters.

** This course will not be required of students electing an Advanced ROTC program.

ELECTIVES

Fifteen of the 23 elective hours included in the forest management curriculum must be selected from an approved list of humanistic-social electives. Furthermore, a minimum of one course must be selected from each of the following categories:

I. Literature and the Arts, II. Economics and History, and III. Other Social Sciences.

Nine hours of Advanced ROTC may be charged against the humanistic-social elective requirement. The remaining nine hours of Advanced ROTC may be chosen from free electives and the three credit hours normally required for SP 210 Public Speaking.

Honors Program in Forestry

The Honors Program in Forestry provides able students opportunity to explore in depth areas in which they are interested, to prepare for graduate school, or to obtain a more rounded education. The program is flexible, permitting concentration of effort in areas of the student's choosing.

Students with at least five quarters remaining in the Forest Management curriculum and with a grade point average of 1.75 or better may apply for admission to the program following completion of the course work requirements through the first six quarters. Permission for election to the program rests with the Head and Executive Council of the Department of Forestry. Upon admission the student will be assigned to a faculty adviser who will guide him in the preparation of his program.

JUNIOR YEAR

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
FY 204 For. Mensur. 5	FY 309 Sampling 3	EH 304 Technical Writing .. 3
FY 205 Wood Identification 5	FY 316 Forest Economics .. 3	Electives 15
FY 420 Silviculture 5	SP 210 Public Speaking* .. 3	
Elective 5	Electives 10	

SUMMER CAMP

FY 390 Field Mensuration .. 5
FY 391 Forest Engineering .. 5
FY 397 Forest Regeneration 3
FY 393 Ala. Forest Indust. 3
FY 396 Forest Site Evaluation 2

SENIOR YEAR

FY 434 Forest Policy 3	FY 407 Forest Management 5	FY 421 Forest Research
FY 427 Forest Valuation ... 5	Electives 13	Methods** 3
Electives 12		FY 480 Senior Thesis 5

FY 490 Seminar in Forestry 1

Electives 9

Total—238 quarter hours

In addition, one of the following courses must be selected: BY 310, Forest Pathology (5); FY 302, Forest Fire Control (3); or ZY 305, Forest Entomology (5).

* This course will not be required for students electing an Advanced ROTC program.

** Any 3 or 5 hour course in statistics may be substituted for FY 421.

The requirements relative to the humanistic-social electives are the same as with the standard forest management curriculum. Twenty-five of the remaining elective hours are to be chosen, under the supervision of the faculty adviser, so as to develop a distinct program leading to a predetermined goal. None of the twenty-five hours in the special program may be used for Advanced Military Science.

Curriculum in Wood Technology (WT)**FRESHMAN YEAR**

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
EH 101 English Comp. 5	EH 102 English Comp. 5	BY 101 General Botany 5
CH 103 General Chemistry .. 4	CH 104 General Chemistry .. 4	CH 105 General Chemistry .. 3
CH 103L Gen. Chem. Lab. .. 1	CH 104L Gen. Chem. Lab. .. 1	CH 105L Gen. Chem. Lab. .. 2
MH 180 Algebra & Trig. 5	MH 161 Anal. Geom. & Cal. 5	EG 102 Eng. Drawing 2
FY 105 Forestry Conv. 0	FY 101 Intr. to Forestry ... 3	MH 162 Anal. Geom. & Cal. 5
MS Military Training 1	MS Military Training 1	MS Military Training 1
PE Physical Education .. 1	PE Physical Education .. 1	PE Physical Education .. 1

SOPHOMORE YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
BY 102	General Botany 5	PS 206	Intr. Physics 5	AS 202	Agr. Economics 5
PS 205	Intr. Physics 5	FY 202	Dendrology 3	FY 205	Wood Identification 5
FY 201	Dendrology 3	FY 206	Wood	EH 304	Technical Writing 3
MH 163	Anal. Geom. & Cal. 5		Measurement** 3	MS	Military Training 1
MS	Military Training 1		Elective 5	PE	Physical Education 1
PE	Physical Education 1	MS	Military Training 1		
		PE	Physical Education 1		

JUNIOR YEAR

CH 203	Organic Chemistry 5	FY 432	Seasoning & Pres.** 5	PO 206	U.S. Government 5
EC 215	Fund. Cost Acctg. 5	ZY 101	General Zoology 5	FY 433	Seasoning & Pres.
FY 311	Wood Tech. I** 5	SP 210	Public Speaking 3		Lab.** 2
	Elective 5		Elective 5		Electives 10

SENIOR YEAR

FY 330	Forest Products** 5	FY 425	Wood Gluing & Lam.** 5	FY 421	Forest Res. Methods*** 3
	Electives 15		Electives 13	FY 431	Wood Tech. III** 5

Total—216 quarter hours

* This course will be taken in all except Summer Quarters.

** Alternate year offering.

*** Any 3 or 5 hour course in statistics may be substituted for FY 421.

Note: Sufficient latitude is allowed that the student may plan his elective work with his adviser to fulfill his personal objectives while in college. Two minors, however, will be required, one of which must be in mathematics, chemistry or engineering. Other suggested minors are: economics, botany, foreign language, zoology, physics, English, business administration, education, and forest management. Each minor shall consist of a minimum of 30 quarter hours in a series of related subjects. Prior to registration for the second quarter of the junior year, the planned course content of the two minors must be approved by the department head. A student may always substitute a more intensive group of courses for one or more of the required courses, provided the same breadth of coverage is maintained.

As a part of the requirement for the degree with a major in wood technology, the student must complete a minimum of three weeks of supervised industrial tours of forest products industries. A satisfactory report on these tours must be submitted to the department head prior to graduation.

Ornamental Horticulture

A blending of art, science and technology, Ornamental Horticulture is one of the Life Sciences concerned with plants for personal enrichment and well-being. The professional Ornamental Horticulturist combines many diverse talents to suit his interests and ambitions.

The Ornamental Horticulture curriculum provides professional and basic knowledge and develops basic skills. By proper selection of electives, students may prepare for careers in research, teaching or extension activities; as owners and managers of floral or woody ornamental production units and of retail outlets for floral and woody ornamental products; landscaping; and managing recreational gardens and other areas.

Degree candidates are required to have three months, or an equivalent of three months, practical experience in industry prior to graduation.

Curriculum in Ornamental Horticulture (OH)

FRESHMAN YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
BY 101	Gen. Botany 5	BY 102	Gen. Botany 5	CH 103	General Chemistry 4
EH 101	English Comp. 5	EH 102	English Comp. 5	CH 103L	Gen. Chem. Lab. 1
MH 160	Alg. & Trig. 5	MH 161	Anal. Geom. & Cal. 5	HF 221	Landscape Gard. 5
MS	Military Training 1	HF 101	Intr. to Orn. Hort. 1	ZY 101	Gen. Zoology 5
PE	Physical Education 1	MS	Military Training 1	MS	Military Training 1
		PE	Physical Education 1	PE	Physical Education 1

FIRST QUARTER		SOPHOMORE YEAR		THIRD QUARTER	
CH 104 General Chemistry ..4		CH 207 Organic Chemistry ..5		EC 200 Gen. Econ. ....5	
CH 104L Gen. Chem. Lab. ..1		HF 223 Evergreen Shrubs & Vines .....5		EC 211 Intr. Acctg. ....5	
HF 222 Trees .....5		HF 224 Plant Propagation ..5		PS 205 Intr. Physics .....5	
HY 107 U.S. History* .....5		MS Military Training ...1		MS Military Training ...1	
MS Military Training ...1		PE Physical Education ..1		PE Physical Education ..1	
PE Physical Education ..1					

* HY 106 may be taken in lieu of HY 107.

JUNIOR YEAR					
BY 306 Fundamentals of Plant Physiology .....5		AY 304 Gen. Soils .....5		EH 390 Adv. Comp. ....5	
ZY 300 Genetics .....5		BY 309 Plant Pathology .....5		HF 321 Deciduous Shrubs & Vines .....5	
HF 323 Greenhouse Const. & Management .....5		SP 210 Public Speaking ...3		Electives .....8	
Elective .....3		Elective .....5			

SENIOR YEAR					
HF 432 Controlled Plant Growth .....5		HF 426 Minor Problems .....5		AY 402 Soil Fertility .....5	
ZY 402 Economic Entomology .....5		Electives .....13		Electives .....13	
Electives .....8					

Total—212 quarter hours

Electives are to be selected with the approval of the student's adviser and dean. There must be a minimum of 25 hours from the Humanities and Social Sciences.

School of Architecture and Fine Arts

J. INGRAHAM CLARK, *Dean*

THE SCHOOL OF ARCHITECTURE AND FINE ARTS includes the Departments of Architecture, Art, Building Technology, Drama, and Music. Undergraduate degree courses are offered in Architecture, Fine Arts, Visual Arts, Drama, Music, Interior Design, and Industrial Design. Graduate degree courses are offered in Art and Building Construction. The Departments of Drama and Music offer sound basic training courses in these fields for students wishing to elect a minor or major concentration in them.

The School of Architecture and Fine Arts, in cooperation with the office of the Vice President for Extension, is developing continuing education and extension programs.

A continuing education seminar entitled "Introduction to Local Planning" is now being offered to civic leaders, community leaders, and to municipal employees of Alabama municipalities. It is believed that such persons completing the course will recognize the need for establishing adequate planning for their communities and municipalities.

Department of Architecture

The Department of Architecture was established in 1907 and is the oldest in the South. Courses are offered leading to the degrees Bachelor of Architecture, Bachelor of Interior Design and Bachelor of Industrial Design.

Admissions

Tests. In addition to meeting the requirements for admission to the University all prospective students will be required to make a satisfactory score on the Architectural School Aptitude Test which is given by the Educational Testing Service, P.O. Box 592, Princeton, New Jersey 98540. Tests are given on certain dates at the Auburn Campus as well as at other university and college campuses throughout the United States. Persons wishing to take the test should correspond directly with the Educational Testing Service.

Acceptance

Acceptance for admission to professional curricula in architecture, industrial design, and interior design in the School of Architecture will be determined by the Admissions Committee in the Department of Architecture on the basis of an evaluation of the candidate's test scores and academic records.

Transfer

Transfer students from non-architectural programs will be required to begin the Design sequence at a level not higher than first quarter, second year. Transfer students from accredited schools of Architecture will be required to present examples of their work for evaluation by the Design Committee. The Committee will determine the level at which the student will enter the Design Sequence.

New students may enter the department any quarter. Transfer students with advanced credit may complete their first year requirements by taking advantage of the Summer session which combines AT 105 and AR 110 and 111.

Architecture

The Curriculum in Architecture prepares the student to take his place as a citizen and as a professional. Since the building industry is one of the three largest in the nation in terms of expenditure and employment, the architect today must accept a concern for the improvement of the physical environment and assume the leadership in evolving effective procedures toward this end. Therefore, in an era of broad technological advancement, the architect must bring to his work technical knowledge, social insight, creative imagination, and individual integrity.

The Department of Architecture is a member of the Association of Collegiate Schools of Architecture, and the curriculum in Architecture is accredited by the National Architectural Accrediting Board. Training at Auburn University prepares the student for the office experience and the examination required by the registration laws for the practice of architecture in Alabama as well as for examination by the National Council of Architectural Registration Boards.

Curriculum in Architecture (AR)

FIRST YEAR		
FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
AT 105 Basic Drawing .....5 DR 101 Intr. to Arts .....1 EH 101 English Comp. .....5 MH 160 Algebra & Trig .....5 MS Military Training .....1 PE Physical Education .....1	AR 110 Design Fundamentals .....5 DR 102 Intr. to Arts .....1 EH 102 English Comp. .....5 MH 161 Anal. Geom. & Cal. 5 MS Military Training .....1 PE Physical Education .....1	AR 111 Design Fundamentals .....5 DR 103 Intr. to Arts .....1 MH 162 Anal. Geom. & Cal. 5 PS 205 Physics .....5 MS Military Training .....1 PE Physical Education .....1
SECOND YEAR		
AR 201 Arch. Design .....5 MH 163 Anal. Geom. & Cal. 5 PS 206 Physics .....5 MS Military Training .....1 PE Physical Education .....1	AR 202 Arch. Design .....5 BT 106 Matis. & Constr. .....5 Group Elective .....5 MS Military Training .....1 PE Physical Education .....1	AR 203 Arch. Design .....5 BT 220 Mech. of Struct. .....5 Group Elective .....5 MS Military Training .....1 PE Physical Education .....1
THIRD YEAR		
AR 301 Arch. Design .....5 BT 311 Structures I .....3 AR 361 History & Theory of Architecture .....3 PG 211 Psychology .....5 General Elective .....3	AR 302 Arch. Design .....5 BT 312 Structures II .....3 AR 362 History & Theory of Architecture .....3 SY 201 Sociology .....5 General Elective .....3	AR 303 Arch. Design .....5 BT 313 Structure III .....3 AR 363 History & Theory of Architecture .....3 EC 206 Socio-Economic Foundations .....3 AR 374 Planning .....2 General Elective .....3
FOURTH YEAR		
AR 401 Arch. Design .....5 BT 411 Structures IV .....3 AR 461 History & Theory of Architecture .....3 SY 405 Sociology .....5 General Elective .....3	AR 402 Arch. Design .....5 BT 412 Structures V .....3 AR 462 History & Theory of Architecture .....3 BT 452 Bldg. Equipment .....3 Group Elective .....5	AR 403 Arch. Design .....5 BT 413 Structures VI .....3 AR 463 History & Theory of Architecture .....3 BT 453 Bldg. Equipment .....3 Group Elective .....5
FIFTH YEAR		
AR 501 Arch. Design .....5 AR 521 Prof. Prac. .....5 BT 541 Bldg. Equipment .....2 Seminar .....2 Group Elective .....5	AR 502 Arch. Design .....5 AR 522 Prof. Prac. .....5 AR 512 Design Research .....2 Group Elective .....5	AR 503 Arch. Design .....7 Seminar .....5 Group Elective .....5

Total—272 quarter hours

Five-hour elective courses will include either three courses in advanced structures or electives chosen from the group electives in Art, Economics, English, Foreign Languages, History, Philosophy, Psychology, Sociology, and Speech.

Three-hour elective courses taken in lieu of Advanced ROTC will be chosen from the following: Economics, English, History, Music, Philosophy, Religion, and Sociology.

Seminars will be chosen from the following list:

AR 558 Seminar in Contemporary Concepts.....	5
AR 559 Seminar in Historical Problems.....	5
AR 560 The Architect and Society.....	2
AR 561 Seminar in Urban Design.....	2
AR 563 Seminar in Architecture Literature.....	2
AR 564 Art and Architecture Seminar.....	3

Honors Program in Architecture

Beginning in the fourth year of the curriculum in Architecture, superior students capable of independent study may be permitted on recommendation of the Committee on Honors Program to pursue an approved sequence of study designed to develop a field of concentration. Following nomination by the Committee, each student shall submit a plan of study for approval before commencing the work. The Program shall comprise a total of 20 hours of credit in the chosen area of study, of which at least 5 hours shall be spent in independent study directed by the Committee. At least 15 hours of normally required elective credit shall be planned as related courses. Appropriate extra assignments in these courses shall be arranged by the Committee for students enrolled and a high level of performance shall be maintained in all work. At the option of the Committee, a comprehensive examination appropriate to the study may be required.

Upon successful completion of the work the candidate shall be awarded the degree Bachelor of Architecture (Honors Program). A total of 279 hours is required for graduation under this Program.

Interior Design

The curriculum in Interior Design seeks to prepare the student to take his place as a professional specialist in the design of interior space. As such, he expects to assume a responsible role among those who shape physical environment. His primary interest in the development of interiors is concerned with the social, historical and technical implications of these aspects of space, surface and material which distinguish his work. His training will enable him to develop a practice as a private consultant, as a designer of furniture and textiles, and as a valuable associate of the architectural design team.

Curriculum in Interior Design (ID)

FIRST YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
AT 105 Drawing I	5	AR 110 Design Funda- mentals	5	AR 111 Design Funda- mentals	5
EH 101 English Comp.	5	EH 102 English Comp.	5	EH 108 Classical Literature	5
MH 121 Intr. College Math.	5	MH 122 Intr. College Math.	5	FL 121 Foreign Language	5
DR 101 Intr. to the Arts	1	DR 102 Intr. to the Arts	1	DR 103 Intr. to the Arts	1
MS Military Training	1	MS Military Training	1	MS Military Training	1
PE Physical Education	1	PE Physical Education	1	PE Physical Education	1

SECOND YEAR

AR 201 Arch. Design	5	AR 202 Arch. Design	5	AR 203 Arch. Design	5
PG 211 General Psychology	5	EC 200 General Economics	5	BT 106 Materials & Constr.	5
AR 361 History & Theory of Architecture	3	AR 362 History & Theory of Architecture	3	AR 363 History & Theory of Architecture	3
AR 215 Elements of ID	2	AR 216 Elements of ID	2	AR 217 Elements of ID	2
MS Military Training	1	MS Military Training	1	MS Military Training	1
PE Physical Education	1	PE Physical Education	1	PE Physical Education	1

FIRST QUARTER		THIRD YEAR		THIRD QUARTER	
SECOND QUARTER					
AR 305	Interior Design 5	AR 306	Interior Design 5	AR 307	Interior Design 5
SY 201	Intr. to Sociology 5	HE 415	History of Textiles 5	EC 331	Marketing 5
AR 461	History & Theory of Architecture 3	AR 462	History & Theory of Architecture 3	AR 463	History & Theory of Architecture 3
AR 365	Period Interiors 2	AR 366	Period Interiors 2	AR 367	Contemporary Interiors 2
	General Elective 3		General Elective 3		General Elective 3
FOURTH YEAR					
AR 405	Interior Design 5	AR 406	Interior Design 5	AR 407	Interior Design 7
AT 338	Art History I 5	AT 339	Art History II 5	Group Elective	..... 5
AR 441	Professional Prac. 2	AR 408	Int. Des. Research 2	Group Elective	..... 5
HE 345	Creative Crafts 2				
	General Elective 3				

Total—210 quarter hours

Industrial Design

Industrial Design is concerned primarily with the relation of products and systems to those who use them, whether it is a typewriter, shelter, chair, automobile, or a therapeutic machine, and encompasses such areas as: product design, industrialized building, package design, corporate identification, transportation design, exhibition design, systems design, and space and environmental planning.

The professional industrial designer works as a leading team member of the development of almost any object of everyday use including consumer goods and capital goods. He studies the total impact of a probable object upon its user, and creates from this viewpoint a useful product which improves the human environment.

Industrial Design is thus an integrating activity in which different abstract data and points of view from technology, art, science and the humanities are transformed and physically embodied into the form, structure, and functions of a machine-produced object for practical and aesthetic use.

The synthesizing Industrial Design courses are based on a multi-disciplinary concept. The four-year curriculum leads to the professional degree of Bachelor of Industrial Design. Graduates will qualify for the positions in Industrial Design consultant offices and in various industries.

The cooperative education program is offered. For more information refer to page 43.

Curriculum in Industrial Design (IN)

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
AT 105	Drawing I 5	AR 110	Design Fundamentals 5	AR 111	Design Fundamentals 5
EH 101	English Comp. 5	EH 102	English Comp. 5	CH 102	Intr. Coll. Chemistry 3
MH 121	Intr. College Math. 5	MH 122	Intr. College Math. 5	PA 202	Ethics & Society 5
IL 101	Woodworking 1	IL 102	Welding Sci. & Appl. 1	DR 103	Intr. to the Arts 1
DR 101	Intr. to the Arts 1	DR 102	Intr. to the Arts 1	EG 102	Engr. Drawing I 2
MS 101	Military Training 1	MS 102	Military Training 1	IL 103	Machine Tool Lab. 1
PE	Physical Education 1	PE	Physical Education 1	MS 103	Military Training 1
				PE	Physical Education 1
SECOND YEAR					
AR 210	Industrial Design 5	AR 211	Industrial Design 5	AR 212	Industrial Design 5
AT 212	Graphic Processes 5	AR 222	Tech. Illustration 5	AR 223	Indus. Des. Methods 5
AR 221	Mats. & Technology 5	PG 211	Gen. Psychology 5	EG 204	Kinematics of Machines 3
EG 104	Descr. Geometry 2	EG 105	Engr. Drawing II 2	PS 204	Survey in Physics 5
IL 104	Sheet Mtl. Des. & Fabrication 1	IL 105	Foundry Technology 1	MS 203	Military Training 1
MS 201	Military Training 1	MS 202	Military Training 1	PE	Physical Education 1
PE	Physical Education 1	PE	Physical Education 1		

FIRST QUARTER		THIRD YEAR		THIRD QUARTER	
		SECOND QUARTER			
AR 310	Industrial Design .....5	AR 311	Industrial Design .....5	AR 312	Industrial Design .....5
SP 211	Essentials Pub. Speaking .....5	AT 338	Art History I .....5	PA 307	Scientific Reasoning 5
EC 200	General Economics 5	IL 308	Gages & Measurements .....5	EC 331	Prin. of Marketing 5
*HY 204	Hist. of Mod. World .....3	*EH 385	Literature of the Scientific Age .....3	*AR 308	Design Workshop ..3
		FOURTH YEAR			
AR 410	Industrial Design .....6	AR 411	Industrial Design .....6	AR 412	Industrial Des. Thesis .....6
PG 461	Industrial Psychology .....5	PA 325	Aesthetics or PA 403 Symbolic Logic .....5	AR 565	Seminar In Indus. Des. .....5
AR 415	His. of Industrial Des. .....5	IL 406	Probs. in Machining 5	SY 408	Industrial Sociology 5
*IL 303	Mfg. Proc.: Shaping, Forming & Fab. ....3	*PG 490	Spec. Problem Psy: (Human Engineering) .....3	*SY 311	Tech. & Soc. Change .....3

Total—228 quarter hours

* Not required for students in Advanced ROTC.

Department of Art

The Department of Art is primarily concerned with professional education in Art. Its curricula are directed toward training students who wish to become professional designers or practitioners in the fine arts. To this end a program of studio courses is combined with studies of the functions and historical background of the visual arts. Courses in general education promote in the student a comprehension of his responsibilities to the society and culture in which he lives. Two curricula are offered: Visual Design and Fine Arts, both leading to the degree of Bachelor of Fine Arts.

Students in the School of Education may elect a minor, major, or special major in Art (See page 112). Students in the School of Arts and Sciences may elect a minor (15 hours) or a double minor (30) hours in Art.

The Department of Art is a member of the National Association of Schools of Art and the College Art Association.

Fine Arts

The two-year basic course in Fine Arts closely resembles that of Visual Design. Both emphasize a fundamental grasp of drawing, design, color, texture and material, and both seek to stimulate a creative use of these elements. Academic studies in languages and the social sciences provide an understanding of cultural heritages, and of human needs and behavior.

In the third year, with faculty approval, the student enters advanced courses in painting, sculpture, and printmaking. Preferences are emphasized through art electives and through academic electives from other areas of the University.

Graduates in Fine Arts may elect to practice in their chosen fields or to teach at advanced levels. Students who contemplate teaching as a career should plan to work toward a Master of Fine Arts degree at this or another institution.

Curriculum in Fine Arts (FA)

FIRST QUARTER		FIRST YEAR		THIRD QUARTER	
		SECOND QUARTER			
AT 105	Drawing I .....5	AT 106	Drawing II .....5	AT 107	Drawing III .....5
AT 181	Design Fundamentals I .....5	AT 113	Perspective .....3	AT 182	Design Fundamentals II .....5
EH 101	English Comp. .....5	EH 102	English Comp. .....5	FL 121	Elementary French 5
DR 101	Intr. to the Arts .....1	DR 102	Intr. to the Arts .....1	DR 103	Intr. to the Arts .....1
MS	Military Training .....1	MS	Military Training .....1	MS	Military Training .....1
PE	Physical Education ..1	PE	Physical Education ..1	PE	Physical Education ..1

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
AT 211	Lettering 5	AT 205	Figure Drawing I 5	AT 215	Figure Construction 5
AT 227	Sculpture I 5	AT 222	Painting I 5	AT 224	Painting II 5
FL 122	Elementary French 5	HY 207	World History 5	HY 208	World History 5
MS	Military Training 1	MS	Military Training 1	MS	Military Training 1
PE	Physical Education 1	PE	Physical Education 1	PE	Physical Education 1
THIRD YEAR					
AT 307	Figure Drawing II 5	AT 305	Printmaking I 5	AT 324	Painting IV 5
AT 322	Painting III 5	AT 327	Sculpture II 5	AT 405	Printmaking II 5
AT 338	Art History I 5	PG 211	Psychology 5	EH 253	Lit. in English 5
*PA 301	Intr. to Philosophy 3	*PA 302	Intr. to Ethics 3	Elective	..... 3
FOURTH YEAR					
AT 339	Art History II 5	AT 422	Painting V 5	AT 496	Thesis 5
AT	Art Elective 5	AT	Art Elective 5	AT	Art Elective 5
PA 325	Aesthetics 5	EH	Adv. English Elec. 5	Elective	..... 5
	Elective 3		Elective 3		Elective 3

Total—212 quarter hours

* Six hours of Advanced ROTC may be substituted for PA 301 and 302.

Visual Design

The program in Visual Design gives fundamental training in the techniques of visual communication. Following a two-year course in basic art principles, the student, with faculty approval, enters Visual Design. A core curriculum emphasizes the techniques of drawing for reproduction, lettering and typographical layout. The student is encouraged to think creatively within the limits of materials and processes. Beginning the third year, the student develops special interests in painting, printmaking, sculpture, illustration or fashion through a series of art electives. Courses in economics, sociology, psychology and other academic subjects further an understanding of the function of design in commerce and industry. This breadth of background increases the possibility of future advancement to administrative levels.

Curriculum in Visual Design (VD)

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
AT 105	Drawing I 5	AT 106	Drawing II 5	AT 107	Drawing III 5
AT 181	Design Fundamentals I 5	AT 113	Perspective 3	AT 182	Design Fundamentals II 5
EH 101	English Comp. 5	EG 102	Engr. Drawing I 2	HY 107	U.S. History 5
DR 101	Intr. to the Arts 1	EH 102	English Comp. 5	DR 103	Intr. to the Arts 1
MS	Military Training 1	DR 102	Intr. to the Arts 1	MS	Military Training 1
PE	Physical Education 1	MS	Military Training 1	PE	Physical Education 1
SECOND YEAR					
AT 211	Lettering 5	AT 205	Figure Drawing I 5	AT 215	Figure Construction 5
AT 227	Sculpture I 5	AT 212	Graphic Processes 5	AT 224	Painting II 5
EH 253	Lit. in English 5	AT 222	Painting I 5	PG 211	Psychology 5
MS	Military Training 1	MS	Military Training 1	MS	Military Training 1
PE	Physical Education 1	PE	Physical Education 1	PE	Physical Education 1
THIRD YEAR					
AT 307	Figure Drawing II 5	AT 339	Art History II 5	AT 361	Fashion I 5
AT 338	Art History I 5	AT 355	Illustration I 5	AT 383	Visual Design III 5
AT 381	Visual Design I 5	AT 382	Visual Design II 5	EC 200	General Economics 5
	Elective 3	Elective 3	Elective 3	Elective	..... 3
FOURTH YEAR					
AT 481	Visual Design IV 5	EC 331	Marketing Principles 5	AT 496	Thesis 5
AT	Art Elective 5	AT	Art Elective 5	AT	Art Elective 5
EH	Adv. English Elective 5	AT	Art Elective 5	Elective	..... 5
	Elective 3	Elective 3	Elective 3	Elective	..... 3

Total—213 quarter hours

Graduate Work in Art

Students who hold the degree of Bachelor of Visual Arts, Fine Arts, or a similar degree, are eligible to apply to the Dean of the Graduate School for admission to the graduate course leading to the degree Master of Fine Arts. For details examine the Bulletin of the Graduate School.

Department of Building Technology

The Department of Building Technology offers courses regarding the structural design of buildings, the design of mechanical and other equipment for buildings, the practical application of building materials, the estimation of building costs, methods of construction and field erection procedures. These courses lead to the degree of Bachelor of Building Construction.

Curriculum in Building Construction (BC)

FIRST YEAR		
FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
BT 104 Intr. to Building	BT 105 Drawing & Proj.	BT 106 Mats., & Constr.
EH 101 English Comp.	EH 102 English Comp.	MH 162 Anal. Geom. & Cal. 5
MH 180 Algebra & Trig.	MH 161 Anal. Geom. & Cal. 5	PS 205 Physics 5
MS Military Training ...1	MS Military Training ...1	MS Military Training ...1
PE Physical Education ..1	PE Physical Education ..1	PE Physical Education ..1
SECOND YEAR		
EC 200 Gen. Economics ....5	EC 211 Intr. Accounting ....5	BT 220 Mech. of Structures 5
MH 163 Anal. Geom. & Cal. 5	CE 201 Surveying .....5	EC 212 Intr. Accounting ....5
PS 206 Physics .....5	Elective .....5	Elective .....5
IL 104 Sheet Metal Des. & Fab. ....1	IL 101 Woodworking ....1	IL 102 Welding Science & Application .....1
MS Military Training ...1	MS Military Training ...1	MS Military Training ...1
PE Physical Education ..1	PE Physical Education ..1	PE Physical Education ..1
THIRD YEAR		
BT 321 Constr. Prob. I ....5	PA 307 Scientific Reasoning 5	EC 445 Indus. Relations or
Group Elective .....5	Group Elective .....5	EC 350 Labor Problems .....5
BT 311 Structures I .....3	BT 312 Structures II .....3	Group Elective .....5
BT 367 History of Bldg. I ..3	BT 368 Hist. of Bldg. II ..3	BT 313 Structures III .....3
Adv. ROTC or Elective .....3	Adv. ROTC or Elective .....3	BT 369 Hist. of Bldg. III ..3
		Adv. ROTC or Elective .....3
FOURTH YEAR		
BT 433 Constr. Methods & Estimating I ..5	BT 434 Constr. Methods and Estimating II .....5	BT 490 Building Const. Thesis .....7
BT 422 Constr. Prob. II ..5	BT 412 Structures V .....3	BT 453 Bldg. Equipment II 3
BT 411 Structures IV .....3	BT 452 Bldg. Equipment I ..3	Technical Elective ..5
Elective .....3	Group Elective .....5	Adv. ROTC or
Adv. ROTC or Elective .....3	Adv. ROTC or Elective .....3	Elective .....3

Total—220 quarter hours

Note: Five-hour elective courses will be chosen from the group electives in Economics, English, Foreign Languages, History, Psychology, Sociology, Speech, and Town Planning.

Note: Three-hour elective courses taken in lieu of Advanced ROTC will be chosen from the following: Art, Economics, English, History, Music, Philosophy, and Religion.

GROUP ELECTIVES

For students in Building Construction

BT 521-2-3 Advanced Structures I-II-III	EC 452 Comparative Economic Systems
EC 305 Geography of North America	EC 460 Economic Development of the South
EC 323 Real Estate	EH 253-4 Literature in English
EC 341 Business Law	EH 352 Contemporary Fiction
EC 245 Statistics	EH 353 Contemporary Drama
EC 457 Economic History of Europe	EH 357-8 Survey of American Literature
EC 458 Economic History of the U.S.	EH 361 History of the English Drama
EC 402 American Industries	EH 363-4 Eighteenth Century English Literature
EC 442 Personnel Management	

EH 371 The American Short Story	HY 431 History of Europe Since the Treaty of Versailles
EH 372 The American Novel	HY 451 The Far East
EH 390 Advanced Composition	HY 452 History of Colonial Latin America
EH 410 European Literature	HY 453 History of Latin America in the National Period
EH 450 Contemporary Poetry	HY 460 Great Leaders of History
EH 451-2 Shakespeare	HY 482 History of the South
EH 457 Victorian Literature	PA 325 Aesthetics
EH 459 Poetry and Prose of the Elizabethan Period	PA 420 Modern Philosophy
EH 481-2 English Novel	PG 211 General Psychology
EH 491 American Poetry	PG 330 Social Psychology
FL 121-2-221 French	PO 206 United States Government
FL 131-2-231 Spanish	PO 209 National Government
FL 241-2-341 Italian	SP 211 Essentials of Public Speaking
FL 151-2-251 German	SY 201 Introductory Sociology
HY 311 Medieval History	SY 301 Sociology of the Family
HY 314 United States Colonial History	SY 304 Race and Culture
HY 404-5 Recent United States History	SY 401 Population Problems
HY 406 The Civil War and Reconstruction	SY 402 Social Theory
HY 408 United States Political Parties	SY 403 Regional Sociology
HY 427 The Reformation Era, 1500-1660	SY 405 Urban Sociology
HY 428 The Age of Reason, 1660-1789	SY 408 Industrial Sociology
HY 429 The Age of Revolutions, 1789-1870	
HY 430 History of Europe from Bismarck through the First World War	

Students who desire to take a second degree in Civil Engineering after graduation in Building Construction can do so in a minimum of four quarters, by substituting in the Building Construction curriculum Physics 201, 202, 203 in place of Physics 205, 206; and by taking Surveying 203 and Chemistry 103-103L, and 104-104L. By using electives and by carrying a one or two hour overload in some quarters, these substitutions and additions need not prolong the completion of the requirements for the Building Construction degree beyond the normal length of 12 quarters.

The additional training to be obtained from this extra work in Civil Engineering will provide strong supplementary skills for any member of the building industry.

Master of Building Construction

Students holding the degree of Bachelor of Building Construction are eligible to apply to the Dean of the Graduate School for admission to the graduate course leading to the degree of Master of Building Construction. The candidate must complete satisfactorily the following curriculum, or its equivalent, as approved by the Dean of the Graduate School, totaling 60 quarter hours.

CE 407 Municipal Engineering	5
EC 434 Purchasing	5
EC 447 Job Evaluation	3
EC 448 Incentive Methods	3
BT 605-6-7 Graduate Research in Building	15
BT 621-2-3 Graduate Construction Design	15
CE 630 Advanced Stress Analysis	5
BT 699 Research and Thesis	10

Department of Drama

The purpose of the curriculum in theatre is to develop creative and professionally knowledgeable practitioners and teachers of the art. The program is organized to provide the prospective artist or artist/teacher a broad range of theatre experience which will enable him to identify and begin initial concentration on the area or areas of his particular ability.

Theatre training experiences are ordered in the following manner:

(1) An introductory year of study and testing. (2) A year devoted to the study and practice of performing. (3) A year devoted to all aspects of the performer's design environment. (4) A fourth year in which the student concentrates primarily on directing.

Particular attention is given to those students who plan to teach in elementary and secondary schools. These students are encouraged to complete the Department's courses in Children's Theatre, Creative Dramatics and Theatre in the Schools.

The Department offers a B.A. degree with a major in Theatre, which may also be taken as a major or minor in the School of Education or as a minor in any of the three options in the School of Arts and Sciences. Participation in the theatre season of plays is required of all majors and minors enrolled in the Department. The Department also offers general elective courses in Theatre practice and theory.

Curriculum in Drama (DR)

FIRST YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
EH 101	English Comp. ....5	EH 102	English Comp. ....5	PG 211	Psychology .....5
FL 121	Elem. French .....5	FL 122	Elem. French .....5	FL 221	Interm. French .....5
DR 101	Intr. to the Arts .....1	DR 102	Intr. to the Arts .....1	DR 103	Intr. to the Arts .....1
DR 104	Intr. to Theatre I ..3	DR 105	Intr. to Theatre II ..3	DR 106	Intr. Theatre Projects .....3
DR 107	Stage Craft I .....1	DR 108	Stage Craft II .....1	DR 109	Stage Craft Project 1
MS	Military Training .....1	MS	Military Training .....1	MS	Military Training .....1
PE	Physical Education ..1	PE	Physical Education ..1	PE	Physical Education ..1

SECOND YEAR

DR 204	Fund. of Acting I: Voice .....5	DR 205	Fund. of Acting II: Movement .....5	DR 206	Acting I .....5
EH 253	Lit. in English .....5	EH 254	Lit. in English .....5	HY 208	World History .....5
DR 201	Theatre Artist in Society I .....3	DR 202	Theatre Artist in Society II .....3	DR 203	Theories of Acting ..3
SP 301	Phonetics .....3	HY 204	World History .....3	SP 232	Broadcast Instru- mentation .....3
MS	Military Training ..1	MS	Military Training ..1	MS	Military Training ..1
PE	Physical Education ..1	PE	Physical Education ..1	PE	Physical Education ..1

THIRD YEAR

DR 304	Fundamentals of Stage Design .....5	DR 305	Design in the Theatre I .....5	DR 306	Design in the Theatre II .....5
EH 410	European Lit. .....5	EH 451	Shakespeare .....5	EH 452	Shakespeare .....5
DR 301	Hist. of Theatre in Western Civilization ..3	DR 302	Hist. of Theatre in Western Civilization ..3	DR 303	Hist. of Theatre in Western Civilization ..3
MU 373	Apprec. of Music ..3	MU 374	Masterpieces of Music .....3	MU 375	Music Elective .....3
	Music Elective ..1		Music Elective .....1		Music Elective .....1

FOURTH YEAR

DR 404	Directing I .....5	DR 405	Directing II .....5	DR 406	Directing III .....5
DR 401	Play Analysis .....3	DR 402	World Theatre .....3	DR 403	Seminar in Theatre Research ...3
AR 365	Period Interiors ..2		Elective .....5		Elective .....5
	Theatre Elective ..5		Elective .....5		Elective .....5
	Theatre Elective ..3				

Total—210 quarter hours

Department of Music

The Department of Music provides instruction and performing experience to students interested in developing their talents in music. The courses of study provided by the Department have been created to present a balance between creative skills and academic studies, allowing at the same time a certain flexibility to meet individual requirements.

The Department of Music offers to the Music major a professional curriculum leading to the degree Bachelor of Music, with majors in (A) Applied Music, (B) Theory and Composition, (C) Church Music. These programs provide preparation for the professional field of performance and for private or college teaching of applied music, theory, and composition. They also provide training for church organists and choir directors.

For the student wishing to major in Music History and Literature, the Department of Music offers a program of studies leading to the Bachelor of Arts degree. This degree is a cultural, not a professional degree.

Many general elective courses are available to all University students as well as courses in applied music in band and orchestral instruments, voice, piano, and organ. Performance groups such as the Marching and Concert Bands, Orchestra, Glee Clubs, Concert Choir, Choral Union, and Opera Workshop are also available to students in all curricula.

Professional Curriculum in Music (MU)

(A) Applied Music Major

FIRST YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
DR 101	Intr. to the Arts .....1	DR 102	Intr. to the Arts .....1	DR 103	Intr. to the Arts .....1
EH 101	English Comp. .....5	EH 102	English Comp. .....5	HY 107	United States Hist. ..5
MU 131	Mat. & Org. of Music .....5	MU 132	Mat. & Org. of Music .....5	MU 133	Mat. & Org. of Music .....5
MU	Major Instrument ..3	MU	Major Instrument ..3	MU	Major Instrument ..3
MU	*Minor Instrument ..1	MU	*Minor Instrument ..1	MU	*Minor Instrument ..1
MU	Perf. Group .....1	MU	Perf. Group .....1	MU	Perf. Group .....1
MU	Eusemble .....1	MU	Ensemble .....1	MU	Ensemble .....1
MS	Military Training ..1	MS	Military Training ..1	MS	Military Training ..1
PE	Physical Education ..1	PE	Physical Education ..1	PE	Physical Education ..1
MU 100	Music Convocation*				

SECOND YEAR

EH 253	English Lit. .....5	EH 254	English Lit. .....5	HY 208	World History .....5
MU 231	Music Theory IV ..3	MU 232	Music Theory V ..3	MU 233	Music Theory VI ..3
MU 251	Survey of Mu. Lit. ..1	MU 252	Survey of Mu. Lit. ..1	MU 253	Survey of Mu. Lit. ..1
MU	Major Instrument ..3	MU	Major Instrument ..3	MU	Major Instrument ..3
MU	Minor Instrument ..1	MU	Minor Instrument ..1	MU	Minor Instrument ..1
MU	Perf. Group .....1	MU	Perf. Group .....1	MU	Perf. Group .....1
MU	Ensemble .....1	MU	Ensemble .....1	MU	Ensemble .....1
MS	Military Training ..1	MS	Military Training ..1	MS	Military Training ..1
PE	Physical Education ..1	PE	Physical Education ..1	PE	Physical Education ..1

THIRD YEAR

FL	Foreign Language ..5	FL	Foreign Language ..5	FL	Foreign Language ..5
MU 334	Counterpoint I .....3	MU 335	Counterpoint II .....3	MU 336	Counterpoint III .....3
MU 351	Music History I .....3	MU 352	Music History II .....3	MU 353	Music History III .....3
MU	Major Instrument ..3	MU	Major Instrument ..3	MU	Major Instrument ..3
MU	Ensemble .....1	MU	Ensemble .....1	MU	Ensemble .....1
Elective	.....3	Elective	.....3	Elective	.....3

FOURTH YEAR

MU 337	Arranging .....3	MU 432	Music Analysis .....3	SY 201	Intr. Sociology .....5
MU 431	Music Analysis .....3	EC 200	Gen. Economics .....5	MU 361	Conducting .....3
MU	Major Instrument ..3	MU	Major Instrument ..3	MU	Applied Lit. .....3
MU	Ensemble .....1	MU	Ensemble .....1	MU	Major Instrument ..3
Elective	.....5	MU	Applied Pedagogy ..3	MU	Ensemble .....1
Elective	.....3	Elective	.....3	Elective	.....3

Total—216 quarter hours

* Minor instrument must be piano for non-piano majors.

** Required of all music students each quarter. Performance and lectures by faculty, guest artists, and students.

(B) Theory and Composition Major

FIRST YEAR		
FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
DR 101 Intr. to the Arts	DR 102 Intr. to the Arts	DR 103 Intr. to the Arts
EH 101 English Comp. ....5	EH 102 English Comp. ....5	HY 107 United States Hist. ....5
MU 131 Mat. & Org. of Music .....5	MU 132 Mat. & Org. of Music .....5	MU 133 Mat. & Org. of Music .....5
MU 181 Applied Piano .....2	MU 182 Applied Piano .....2	MU 183 Applied Piano .....2
MU 116 Woodwind Class ....1	MU 117 Woodwind Class ....1	MU 118 Woodwind Class ....1
MU 110 String Class .....1	MU 111 String Class .....1	MU 112 String Class .....1
MU Perf. Group .....1	MU Perf. Group .....1	MU Perf. Group .....1
MU Ensemble .....1	MU Ensemble .....1	MU Ensemble .....1
MS Military Training ....1	MS Military Training ....1	MS Military Training ....1
PE Physical Education ..1	PE Physical Education ..1	PE Physical Education ..1
MU 100 Music Convocation***		
SECOND YEAR		
EH 253 English Lit. .....5	EH 254 English Lit. .....5	HY 208 World History .....5
MU 231 Music Theory IV ....3	MU 232 Music Theory V ....3	MU 233 Music Theory VI ....3
MU 281 Applied Piano .....2	MU 282 Applied Piano .....2	MU 283 Applied Piano .....2
MU 251 Survey of Mu. Lit. ....1	MU 252 Survey of Mu. Lit. ....1	MU 253 Survey of Mu. Lit. ....1
MU 107 Voice Class .....1	MU 108 Voice Class .....1	MU 119 Percussion Class .....1
MU 113 Brass Class .....1	MU 114 Brass Class .....1	MU 115 Brass Class .....1
MU Perf. Group .....1	MU Perf. Group .....1	MU Perf. Group .....1
MU Ensemble .....1	MU Ensemble .....1	MU Ensemble .....1
MS Military Training ....1	MS Military Training ....1	MS Military Training ....1
PE Physical Education ..1	PE Physical Education ..1	PE Physical Education ..1
THIRD YEAR		
FL Foreign Language ..5	FL Foreign Language ..5	FL Foreign Language ..5
MU 334 Counterpoint I ....3	MU 335 Counterpoint II ....3	MU 336 Counterpoint III ....3
MU 351 Music History I ....3	MU 352 Music History II ....3	MU 353 Music History III ....3
MU 331 Modern Harmony ....3	MU 454 Instrumental Lit. ....3	MU 361 Conducting ....3
MU 381 Applied Piano .....1	MU 382 Applied Piano .....1	MU 383 Applied Piano .....1
Elective .....3	Elective .....3	Elective .....3
FOURTH YEAR		
MU 431 Music Analysis .....3	MU 432 Music Analysis .....3	SY 201 Intr. Sociology .....5
MU 434 Composition I ....3	MU 435 Composition II ....3	MU 436 Composition III ....3
MU 437 Orchestration I ....3	MU 438 Orchestration II ....3	MU 439 Orchestration III ....3
MU 481 Applied Piano .....1	MU 482 Applied Piano .....1	MU 483 Applied Piano .....1
Elective .....5	EC 200 Gen. Economics .....5	MU 445 Theory Pedagogy .....3
Elective .....3	Elective .....3	Elective .....3
Total—216 quarter hours		

(C) Church Music Major

Organ or Voice Applied Medium

FIRST YEAR		
FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
DR 101 Intr. to the Arts ....1	DR 102 Intr. to the Arts ....1	DR 103 Intr. to the Arts ....1
EH 101 English Comp. ....5	EH 102 English Comp. ....5	HY 107 U.S. History ....5
MU 131 Mat. & Org. of Music .....5	MU 132 Mat. & Org. of Music .....5	MU 133 Mat. & Org. of Music .....5
MU Major Instrument ....3	MU Major Instrument ....3	MU Major Instrument ....3
MU Minor Instrument ..1	MU Minor Instrument ..1	MU Perf. Group .....1
MU Perf. Group .....1	MU Perf. Group .....1	MU Ensemble .....1
MU Ensemble .....1	MU Ensemble .....1	MS Military Training ....1
MS Military Training ....1	MS Military Training ....1	PE Physical Education ..1
PE Physical Education ..1	PE Physical Education ..1	Physical Education ..1
MU 100 Music Convocation***		

* Minor instrument for voice major would be piano or organ. Minor area for organ major would be voice.

*** Required of all music students each quarter.

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
EH 253 English Lit.	5	EH 254 English Lit.	5	HY 208 World History	5
MU 231 Music Theory IV	3	MU 232 Music Theory V	3	MU 233 Music Theory VI	3
MU Major Instrument	3	MU Major Instrument	3	MU Major Instrument	3
MU 251 Survey of Mu. Lit.	1	MU 252 Survey of Mu. Lit.	1	MU 253 Survey of Mu. Lit.	1
MU Minor Instrument	1	MU Minor Instrument	1	MU Minor Instrument	1
MU Perf. Group	1	MU Perf. Group	1	MU Perf. Group	1
MU Ensemble**	1	MU Ensemble	1	MU Ensemble	1
MS Military Training	1	MS Military Training	1	MS Military Training	1
PE Physical Education	1	PE Physical Education	1	PE Physical Education	1
THIRD YEAR					
FL Foreign Language	5	FL Foreign Language	5	FL Foreign Language	5
MU 351 Music History I	3	MU 352 Music History II	3	MU 353 Music History III	3
MU 334 Counterpoint I	3	MU 335 Counterpoint II	3	MU 336 Counterpoint III	3
MU Major Instrument	3	MU Major Instrument	3	MU Major Instrument	3
MU 312 Hymnology	3	MU 311 Liturgies	3	MU Ensemble	1
MU Ensemble	1	MU Ensemble	1	Elective	3
FOURTH YEAR					
MU 431 Music Analysis	3	EC 200 Gen. Economics	5	SY 201 Intr. Sociology	5
MU Major Instrument	3	MU 432 Music Analysis	3	MU Major Instrument	3
MU 361 Conducting	3	MU Major Instrument	3	MU 453 Choral Lit.	3
MU Ensemble	1	MU 415 Organ Design &	3	MU 416 Ch. Music Seminar	3
Elective	5	Lit.***	3	MU Ensemble	1
Elective	3	MU Ensemble	1	Elective	3
		MU 362 Choral Conducting	1		
		Elective	2		

Total—218 quarter hours

** Service playing, MU 211-12, takes the place of ensemble for organ students for two quarters. May be taken sophomore or junior years.

*** Vocal Pedagogy for voice students.

Bachelor of Arts

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
DR 101 Intr. to the Arts	1	DR 102 Intr. to the Arts	1	DR 103 Intr. to the Arts	1
EH 101 English Comp.	5	EH 102 English Comp.	5	FL Foreign Language	5
FL Foreign Language	5	FL Foreign Language	5	HY 107 United States Hist.	5
MU 131 Mat. & Org. of		MU 132 Mat. & Org. of		MU 133 Mat. & Org. of	
Music	5	Music	5	Music	5
MU Applied Music	2	MU Applied Music	2	MU Applied Music	2
MS Military Training	1	MS Military Training	1	MS Military Training	1
PE Physical Education	1	PE Physical Education	1	PE Physical Education	1
MU 100 Music Convocation		SECOND YEAR		THIRD YEAR	
EH 253 English Lit.	5	EH 254 English Lit.	5	EC 200 Gen. Economics	5
HY 207 World History	5	HY 208 World History	5	SY 201 Intr. Sociology	5
MU 231 Music Theory IV	3	MU 232 Music Theory V	3	MU 233 Music Theory VI	3
MU 251 Survey of Mu. Lit.	1	MU 252 Survey of Mu. Lit.	1	MU 253 Survey of Mu. Lit.	1
MU Applied Music	2	MU Applied Music	2	MU Applied Music	2
MS Military Training	1	MS Military Training	1	MS Military Training	1
PE Physical Education	1	PE Physical Education	1	PE Physical Education	1
THIRD YEAR					
MU 351 Music History I	3	MU 352 Music History II	3	MU 353 Music History III	3
MU 334 Counterpoint I	3	**Science or Math.	5	MU 451 Music Literature	3
PG 211 Gen. Psychology	5	*Minor	5	*Minor	5
*Minor	5	Elective	5	Elective	5
FOURTH YEAR					
MU 365 Arranging	3	MU 432 Music Analysis	3	AT 331 His. Ptg. & Sculp.	5
MU 431 Analysis	3	MU 453 Music Literature	3	MU 361 Conducting	3
MU 452 Music Literature	3	*Minor	5	MU 454 Music Literature	3
*Minor	5	Elective	6	*Minor	5
Elective	3			Elective	2

Total—216 quarter hours

* Two minors of 15 quarter hours each will be elected from approved courses in foreign languages and history. Except for foreign languages, subjects must be numbered 200 or above.

** One of the following courses must be selected: PS 204, BY 201, ZY 101, MH 107, MH 181.

Supplementary Requirements for Bachelor of Music and Bachelor of Arts Degree Candidates

1. Attendance at campus music functions and student convocations is compulsory. Absences may be excused only by the Head of the Music Department.
2. At the end of the Sophomore year a comprehensive examination will be given which must be passed before the student is admitted to the upper division music courses.
3. A. Students electing the applied music major must present a junior and senior recital during the third year of study and a senior recital during the fourth year of study.
 B. Students electing the theory and composition major must present an original composition in small form during the third year of study and an original composition in large form during the fourth year of study.
 C. Students electing the history and literature major must present a written thesis during the fourth year of study.
 D. Students electing the church music major must present a senior recital during the fourth year of study.
4. Credit in applied music is based on the amount of practice, each credit hour requiring a minimum of five hours practice per week.
5. Students whose major performing medium is not piano or organ must elect piano as the minor instrument. Before graduation all students must meet minimum Sophomore NASM applied music requirements in piano.
6. Participation in an approved music performing group is required each quarter, with or without credit.
7. All students taking applied music must meet public performance requirements as designated by the faculty. (See Music Dept. special regulations regarding requirements for jury examinations and convocation performances.)

Music Education

For the student wishing to become a teacher of music, the Department of Music offers a full program of studies in conjunction with the School of Education leading toward certification by the State Department of Education. See Secondary Education for further information regarding Education majors and minors in Music.

Music Organizations

Several musical organizations, sponsored by the University and directed by the Department of Music, provide excellent training in group music. See index under "Music Organizations." These activities, which are open to students of the University, may be taken without credit.

Graduate Work in Music

Students who hold a baccalaureate degree in Education with a Major in Music are eligible to apply to the Dean of the Graduate School for admission to the graduate courses leading to the degrees Master of Science and Master of Education with Major in Music. The candidate must complete satisfactorily the following curriculum totaling 45 quarter hours.

Education and Foundation Courses.....	15
Music and Music Education Courses.....	.30

School of Arts and Sciences

EDWARD H. HOBBS, *Dean*

THE SCHOOL OF ARTS AND SCIENCES traces its origin to the Academic Faculty of the East Alabama Male College, the predecessor of Auburn University. From 1929 to 1967, it was known as the School of Science and Literature; however, effective July 1, 1968, it was renamed the School of Arts and Sciences. Consisting of 11 departments — English, Foreign Languages, Geology, History, Mathematics, Philosophy, Political Science, Psychology, Physics, Sociology, and Speech — the School offers instruction in three areas: the liberal arts, the physical sciences, and the social sciences.

In keeping with the traditional role of a School of Arts and Sciences, the aim of its program is to give the student a broad general education and at the same time an opportunity to acquire depth in a particular academic area which he selects for a major. Thus, the guiding intent of the School is, on the one hand, to prepare the student to become a responsible citizen in the modern world and, on the other, to equip him with a strong foundation for later specialization should he desire to engage in post-baccalaureate study in a graduate or professional school. Students of all other divisions of the University enroll in its courses to meet their own educational objectives.

Three Curriculum Areas

The School of Arts and Sciences offers four-year bachelor's degree programs in three curriculum areas: (1) general, (2) pre-professional, and (3) special scientific.

The General Curriculum offers options in fourteen major fields, with elective minors in twenty-six departmental areas. Eight of these majors lead to Bachelor of Arts and six to Bachelor of Science degrees.

Pre-professional four-year programs are offered in pre-law, pre-dentistry, pre-medicine, and pre-veterinary medicine. If a pre-professional student gains early admission to the professional school of his choice, he may receive a combination baccalaureate degree upon completion of three years of pre-professional work and one year of professional school.

Special Scientific Curricula are available in Geology, Mathematics, Physics, Applied Physics, and Psychology.

Student Advisers

In the General Curriculum, the head of the department in which the student majors — or someone designated by him — automatically becomes the student's adviser and is charged with the responsibility of outlining the student's major and minor work; the Office of the Dean, however, provides counseling services to the student before he declares a major. Counselors in the dean's office (assisted by departmental advisers in respect to the student's major) also advise students in pre-professional areas. Advisory services for special scientific curricula are provided by the appropriate departments.

Foreign Language

In all curricula in this school that require fifteen hours in a foreign language, the work must be in one language.

Cooperative Program in Mathematics, Physics, and Applied Physics

Cooperative Educational Programs which give students an opportunity to integrate their academic training with work experience are offered in Mathematics, Physics, and Applied Physics. Students alternate each three or six months between school and a work assignment provided through the Director of the Cooperative Education Program, 107 Ramsay Hall, Auburn University.

Graduate Degrees

Master of Arts degrees are offered in the areas of English, history, and speech. Master of Science degrees are offered in areas of mathematics, physics, and psychology. In addition, a Master of Political Science degree is offered at Air University in Montgomery, Alabama, through the Department of Political Science of Auburn University. The Doctor of Philosophy degree is offered in areas of English, history, mathematics, physics, and psychology. Requirements for these degrees are printed in the Graduate School Bulletin.

The General Curriculum (GC)[†]

The general curriculum is designed to broaden the student through the humanities and the natural and social sciences. It also serves as a base for the majors listed below.

Majors In The General Curriculum

Bachelor of Arts: English (EH), Foreign Language (FL), History (HY), Journalism (JM), Philosophy (PA), Political Science (PO), Speech (SP), and Sociology (SY).

Bachelor of Science: Biology (GBI)^{††}, Chemistry (GCH)^{††}, Economics (EC), Geography (GY), Mathematics (GMH)^{††}, and Physics (GPS)^{††}.

Since some of the above majors require alignment of courses beginning in the freshman and sophomore years, it is important that the student be alert early in his college career to all of the requirements of his major which are printed under Special Requirements for Departmental Majors on pages 84-86.

Minors: Students who choose one of the above majors will select two minors, or one double minor, from the following: Architecture, Art, Botany, Chemistry, Dramatics, Economics, Education, English, Foreign Language, Geography, Geology, History, Home Economics, Journalism, Mathematics,

[†]A student undecided about a major may delay declaring one until the end of his fifth quarter. Before a major is declared, his curriculum will be identified by the symbol GC (General Curriculum). As soon as he is reasonably certain, however, he should declare his major and identify it by the appropriate departmental symbol listed above.

^{††}Three-letter symbols for majors in biology (GBI), chemistry (GCH), mathematics (GMH), and physics (GPS) are used to distinguish them from special curricula—biology (BI) in the School of Agriculture, chemistry (CH) in the School of Chemistry, and mathematics (MII) and physics (PS) in the School of Arts and Sciences.

Music, Philosophy, Physical Education, Physics, Political Science, Psychology, related subjects in Agriculture or Engineering, Secretarial Administration, Sociology, Speech, and Zoology. (Note: The student cannot major and minor in the same field.)

FRESHMAN YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
EH 101 English Comp.	5	EH 102 English Comp.	5	HY 107 U.S. History	5
FL I For. Language*	5	FL II For. Language*	5	FL III For. Language*	5
HY 106 U.S. History**	5	Elect. I Sequence	5	Elect. I Sequence	5
Basic ROTC	1	Basic ROTC	1	Basic ROTC	1
PE Physical Education ..1		PE Physical Education ..1		PE Physical Education ..1	

SOPHOMORE YEAR

PO 209 U.S. Nat. Govt.	5	EH 253 Lit. in English	5	EH 254 Lit. in English	5
SY 201 Intr. Sociology	5	PO 210 State Govt.	5	Group IV Elect.	5
Group II Elect.	5	Group III Elect.	5	Group V Elect.	5
Basic ROTC	1	Basic ROTC	1	Basic ROTC	1
PE Physical Education ..1		PE Physical Education ..1		PE Physical Education ..1	

Women students will take PE 111-112-113 Health Science in the freshman year and 3 quarters of HY 205 Current Events in the sophomore year in lieu of ROTC.

Elective I Sequence must include ten hours of mathematics (MH 160 or above) or a single science to be chosen from (1) CH 103-104 and labs, (2) CL 101-102, (3) PS 205-206, or (4) ZY 101-102.

Group II Electives: Five hours of one of the following: mathematics (MH 160 or above), a natural science including labs, geography, ***psychology (PG 211) or ***speech.

Group III Electives: Five hours of one of the following: HY 207, mathematics (MH 160 or above), a natural science including labs, ***psychology (PG 211 or 212), or ***speech. (Pre-law students are required to take HY 207.)

Group IV Electives: Five hours of one of the following: EC 200, HY 208, political science (300 level), or sociology. (Pre-law students are required to take EC 200.)

Group V Electives: Five hours of one of the following: political science (300 level) or sociology.

JUNIOR AND SENIOR YEARS

During the junior and senior years the student is to complete ****Philosophy PA 301 (3) and ****Logic PA 308 (3), a minimum of thirty-five hours in his major, fifteen hours in each of two minors (or thirty in one double minor), and additional elective work to add up to a total of 210 hours. All major and minor courses are to be numbered 200 or above. The normal load for juniors and seniors is 18 hours.

Total—210 quarter hours

* Fifteen hours are required in the same language. Students who have satisfactorily completed two years of a foreign language in high school should begin that language at the intermediate level; college credit is not normally granted in such cases in elementary level courses. (See page 221.)

** Mathematics and natural science majors will take MH 160 (or 161) here, delaying HY 106, and follow it with other required freshman and sophomore level mathematics courses (see special requirements for departmental majors on page 85). Group V Elective is waived for mathematics and natural science majors.

*** Students are limited to five hours of geography and a combined total of ten hours of psychology and/or speech in the first two years of this curriculum.

**** PA 301 and PA 308 are waived for students completing eighteen hours of advanced ROTC.

Special Requirements for Departmental Majors

Students in these majors should consult with their advisers regularly to plan their major work, clear pre-requisites, and take their major courses according to departmental schedule. A minimum of thirty-five hours is required in each major and fifteen in each minor. All courses must be numbered 200 or above.

The Biology Major (GBI). The Arts and Sciences student selecting a major in biology will take BY 101-102, CH 103-104-207-208-301 including labs, MH 160-161, PS 205-206, and ZY 101-102 among his electives or on his minors. The major will include BY 306, BY 406, ZY 300, ZY 424 or 214, and VM 200 plus ten additional hours to be chosen from the following: BY 410, BY 413, BY 415, BY 416, BY 420, BY 430, ZY 301, ZY 302, ZY 304, ZY 306, ZY 308, ZY 401, ZY 409, ZY 411, or ZY 421 and 422. (See special curriculum in biology in the School of Agriculture.)

The Chemistry Major (GCH). The Arts and Sciences student selecting a chemistry major will take CH 103-104-105 and labs (or CH 111-112-113), MH 160-161-162, PS 205-206 (or PS 201-202-203) among his electives or on his minors. The major will include CH 204-205-207-208 plus fifteen additional hours of chemistry on the 300-400 level. (See special curriculum in Chemistry in the School of Chemistry.)

The Economics Major (EC). The Arts and Sciences student majoring in economics will take MH 160-161 during his freshman or sophomore year and IE 301 during his junior or senior year. The major will include EC 202, EC 274, EC 360, EC 451, and either EC 446 or EC 456, plus 10 additional hours in Economic Theory (EC 446, EC 452, EC 453, EC 454, EC 456, EC 462, EC 465, EC 471, EC 472.)

The English Major (EH). Twenty hours of foreign language preferably in one language, and five hours of history (English or European) are required for the English major. The student should work out a balanced program of 300-400 courses with his English faculty adviser. This programs should include: (a) one course from this group: EH 390, 401, 441; (b) three courses selected from different periods, each of the three emphasizing a different type of literature (i.e. fiction, poetry, drama); (c) three survey or period courses dealing with the literature of different ages.

The Foreign Language Major (FL). A major requires the completion of at least thirty-five hours above the one-hundred level. These courses must be taken in one language. A minor involves completion of FL 322, 332 or 352. The major or minor student should consult the head professor regarding his program.

The Geography Major (GY). A major in geography must include GY 305, 404, and 405.

The History Major (HY). A major must include HY 207-208.

The Journalism Major (JM). Thirty-six hours of course work in journalism are required for the major. JM 221, 224, 322, and 421 must be taken by all majors. The additional eleven hours must include either JM 323 or 465 plus JM 422-3 (Journalism Workshop, 6 hrs.), or JM 424 (Journalism Internship, 6 hrs.). Students majoring or minoring in journalism should consult the journalism faculty about their programs of study. JM 221 should be scheduled during the sophomore year.

The Mathematics Major (GMH). A major in mathematics should include MH 160 or MH 161, as appropriate, during the student's first quarter and

should complete the freshman calculus sequence MH 161-62-63 as early in his program as possible. He then will meet his major requirement by following one of two plans. Plan I is oriented toward theoretical mathematics and under it a student must select at least seven courses appearing in the last three years of the Mathematics Curriculum on page 91. This plan may be used to prepare for graduate study in mathematics. Under Plan II a student must take MH 220, MH 221, MH 331, MH 361, MH 367, MH 405, and MH 460 or MH 461. This program provides appropriate preparation in mathematics for a computer-related career. A suitable minor may be based on courses taught in the School of Engineering. (See special curriculum in Mathematics.)

The Philosophy Major (PA). In addition to PA 301 and 308, required of all Arts and Sciences students excepting those completing advanced ROTC, the major includes thirty-five hours of which ten should be in the history of philosophy involving any combination of PA 410, 420, 425, 440, 470, 475; five hours in either Aesthetics PA 325, or Ethical Theory PA 404; five hours in Metaphysics PA 455, or Epistemology PA 460; five hours in Symbolic Logic PA 403, or Philosophy of Science PA 400; five hours in Existentialism PA 402, or Contemporary Philosophy PA 430; and any one other five-hour philosophy course above 200. Majors should consult with the Department respecting minor areas and electives. The minor should include fifteen hours of philosophy in addition to PA 301 and 308. PA 310 and 315 may not be taken as part of either the major or the minor.

The Physics Major (GPS). The student selecting a major in physics will take mathematics through MH 163 in his freshman and sophomore years, and MH 264 among his electives or on a minor. While not required, MH 361 is recommended during the junior year. Ten hours in another natural science (with laboratory) must be completed. The major will include PS 205-206-210 (or PS 201-202-203), PS 217, PS 301 or PS 302, PS 303 or PS 304, PS 305, and PS 406. A minor consists of PS 205-206-210 or PS 201-202-203. (See special curricula in Physics and Applied Physics.)

The Political Science Major (PO). The major will consist of 35 hours of political science beyond the 200 level.

The Speech Major (SP). The areas of speech are (a) fundamentals, (b) public address, (c) interpretation, (d) television-radio-film, (e) audiology and speech pathology, and (f) group methods. A student may elect to pursue a general course of study by taking SP 200, 201, 211 and twenty-five additional hours with at least one course in the areas of c, d, e, and f; or he may emphasize audiology and speech pathology by taking SP 200, 201, 211 and twenty-five additional hours primarily in area e; or he may emphasize television-radio-film by taking SP 201, 211, 230, 235, SP 234 or 236, SP 334 or 336 or 338, SP 436 or 438 or 439, and five hours in area a, c, or f.

The Sociology Major (SY). A major will consist of a minimum of 35 hours of sociology courses following SY 201, including SY 202, 203, and 309. In addition, SY 220 (Statistics) is required. The student should consult the Sociology Department each quarter of the junior and senior years regarding completion of his major.

Pre-Professional Curricula

Curriculum in Pre-Law (PL)

FRESHMAN AND SOPHOMORE YEARS

(Same as the General Curriculum, except that EC 200 and HY 207 will be taken as Group III and Group IV Electives.)

The pre-law curriculum is designed to prepare students for accredited professional law schools, most of which require for admission a bachelor's degree and a good score on the Law School Admission Test.

After completion of the first two years of the General Curriculum, the pre-law student will take three quarters of HY 205 Current Events in the junior year, and during the junior and senior years complete a major of 35 hours, two minors of 15 hours each or one double minor of 30 hours, and additional work to add up to a total of 210 hours, including EC 200, EC 202, EC 215, EH 390, HY 207, HY 471, *PA 301, *PA 308, PO 401, and SP 211. Recommended in addition to these are HY 208, SP 283, and additional courses in political science. All major and minor courses are to be numbered 200 and above.

Majors in Pre-Law

Bachelor of Arts: English, Foreign Language, History, Journalism, Philosophy, Political Science, Speech and Sociology.

Bachelor of Science: Biology, Chemistry, Economics, Geography, Geology, Mathematics, and Physics. Since some of these majors require alignment of courses beginning in the freshman and sophomore years, it is important that the pre-law student be alert to all of the requirements of his major (printed under "Special Requirements for Departmental Majors" on pages 84-86) early in his college career. Minors may be chosen from those listed under the General Curriculum on page 83. The quarterly load for a pre-law student is 19 hours in the junior year and 18 hours in the senior year.

A pre-law student who is able to gain admission into an accredited professional law school short of a degree may obtain a combination bachelor's degree by completing the first three years of this curriculum (including the special requirements listed above) and the freshman year of law school.

Total—210 quarter hours

* PA 301 and PA 308 are waived for students completing eighteen hours of advanced ROTC.

Curriculum in Pre-Dentistry (PD) and Pre-Medicine (PM)

This curriculum leads to a Bachelor of Science degree and is designed to prepare students for the rigorous demands of American medical and dental schools. The requirements are very exacting and demand high scholastic competence and performance. Students must strive for a B-plus four-year college record to attain good promise of being selected by a medical or a dental school.

The BS degree is required by most dental and medical schools for admission; however, if a student is able to enter a dental or medical school prior to graduation, he may receive a combination BS degree by completing successfully the first nine quarters of this curriculum and the freshman year of professional school.

FRESHMAN YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
CH 103	Gen. Chem. & Lab. 5	CH 104	Gen. Chem. & Lab. 5	CH 105	Gen. Chem. & Lab. 5
EH 101	English Comp. ....5	EH 102	English Comp. ....5	HY 106	U.S. History .....5
MH 160	Algebra & Trig. ....5	MH 161	An. Geom. & Cal. I 5	MH 162	An. Geom. & Cal. II 5
	Basic ROTC .....1		Basic ROTC .....1		Basic ROTC .....1
PE	Physical Education ..1	PE	Physical Education ..1	PE	Physical Education ..1

SOPHOMORE YEAR

CH 204	Anal. Chem. I & Lab. ....5	CH 207	Organic Chemistry ..5	CH 208	Organic Chemistry ..5
HY 107	U.S. History .....5	PS 206	Physics .....5	PS 210	Pre-Med. Physics ..5
PS 205	Physics .....5	ZY 101	Gen. Zoology .....5	ZY 102	Gen. Zoology .....5
HY 205	Current Events ....1	HY 205	Current Events ....1	HY 205	Current Events ....1
	Basic ROTC .....1		Basic ROTC .....1		Basic ROTC .....1
PE	Physical Education ..1	PE	Physical Education ..1	PE	Physical Education ..1

Women students will take PE 111-112-113 Health Science in the freshman year and 3 quarters of HY 205 Current Events in the sophomore year in lieu of ROTC.

JUNIOR YEAR

EH 253	Lit. in English .....5	EH 254	Lit. in English .....5	CH 316	Physical Chem. .....5
PO 209	Nat. Government ...5	HY 207	World History .....5	EH 390	Advanced Comp. ....5
ZY 300	Genetics .....5	PG 211	Gen. Psychology ..5	ZY 302	Vert. Embryology ..5
PA 308	Intr. to Logic* ....3	EH 141	Med. Vocabulary ...3	HY 204	Hist. Mod. World ..3

SENIOR YEAR

PO 401	Const. Hist. U.S. ....5	Group I Elect. .....5	Group I Elect. ....5
ZY 301	Comp. Anatomy ....5	Group I Elect. .....5	Group I Elect. ....5
	Group I Elect. ....5	Group I Elect. .....5	Group I Elect. ....5
	Group II Elect. ....3	Group II Elect. ....3	

Total—210 quarter hours

Group I Electives: EC 200, EC 202, **FL (a minimum of 15 hours in the same language), GL 101, GL 102, IE 301, MH 163, MH 264, MH 361, PA 202, PG 212, PG 330, SP 211, SY 201, SY 202, SY 203, SY 207, VM 200, ZY 424, and/or up to 10 hours of 300-400 level courses in English, history, philosophy, political science, and sociology.

Group II Electives: These electives are to be chosen from courses offered by the following disciplines: AR, BY, DR, EC, EH, GY, HY, MU, PA, PS, PG, SP, SY, and ZY. EED 310 may also be taken.

Technical Option: Pre-dental and pre-medical students who prefer a more technical undergraduate education should continue mathematics through MH 264, substitute CH 111-112-113 for CH 103-104-105; take CH 205 to follow CH 204 and CH 305 to follow CH 207-208; substitute PS 201-202-203 for PS 205-206-210; and CH 407-408-409 for CH 316, the extra courses being used as Group I Electives. The remaining requirements should be chosen from the social science and humanities courses listed under Group I and II electives above to avoid sacrificing the liberal education required by the professional schools.

Major Option: Professional schools are becoming increasingly interested in students who reach some degree of depth especially in a non-medical related discipline. Accordingly, majors are offered in Economics, English, Foreign Language, Geography, History, Journalism, Mathematics, Philosophy, Political Science, Sociology, and Speech. Science majors are offered in Biology, Chemistry, and Physics. Students electing a major under this option should become acquainted with the special requirements for his major on pages 84-86 as early as possible, as some majors require alignment of courses beginning in the freshman, sophomore, or junior years.

Pre-Optometry Option: May be worked out with the PM adviser.

Pre-Therapy Option: May be worked out with the PM adviser.

* PA 308 is waived for students completing eighteen hours of advanced ROTC.

** Fifteen hours are required in the same language. Students who have satisfactorily completed two years of a foreign language in high school should begin that language at the intermediate level; college credit is not normally granted in such cases in elementary level courses. (See page 221.)

Curriculum in Pre-Veterinary Medicine (PV)

The Pre-Veterinary Medicine curriculum at Auburn is open only to students who are bona fide residents of the State of Alabama under the Regional Plan of the Southern Regional Education Board. Minimum requirements for admission to the School of Veterinary Medicine are the first seven quarters as listed below (120 quarter hours).

Students in PV may obtain a Bachelor of Science degree by completing the first nine quarters of this curriculum plus: (1) successfully completing the freshman year of Veterinary School; or (2) forty-five hours of Group I Electives and nine hours of Group II Electives; or (3) completing the requirements for a major in Economics, English, Geography, Journalism, Foreign Language, History, Mathematics, Political Science, Philosophy, Speech, or Sociology as listed under "Special Requirements for Departmental Majors" on pages 84-86.

FRESHMAN YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
EH 101	English Comp. ....5	CH 103	Gen. Chem. & Lab. 5	CH 104	Gen. Chem. & Lab. 5
HY 107	U.S. History .....5	EH 102	English Comp. ....5	PS 205	Physics .....5
MH 160	Algebra & Trig. ....5	MH 161	Anal. Geom. & Cal. I .....5	ZY 101	Gen. Zoology .....5
PE	Basic ROTC .....1		Basic ROTC .....1		Basic ROTC .....1
	Physical Education ..1		Physical Education ..1	PE	Physical Education ..1

SOPHOMORE YEAR

CH 105	Gen. Chem. & Lab. 5	AH 204	Animal Bio. & Nut. 5	CH 208	Organic Chemistry ..5
PS 206	Physics .....5	CH 207	Organic Chemistry ..5	PO 209	U.S. National Govt. 5
ZY 102	Gen. Zoology .....5		Group I Elect. .....5		Group I Elect. .....5
	Basic ROTC .....1		Basic ROTC .....1		Basic ROTC .....1
PE	Physical Education ..1	PE	Physical Education ..1	HY 205	Current Events .....1

JUNIOR YEAR

ZY 300	Genetics .....5	CH 204	Anal. Chem. I & Lab. .....5	CH 316	Phy. Chemistry .....5
	Group I Elect. ....5			FL III	For. Language .....5
AH 302	Feeds & Feeding ...3	FL II	For. Language .....5		Group I Elect. .....5
EH 141	Med. Vocabulary ...3	PS 210	Pre-Med. Physics .....5		Group II Elect. ....3
HY 305	Current Events .....1		Group II Elect. ....3		
PE	Physical Education ..1				

Women students will take PE 111-112-113 Health Science in the freshman year and 3 quarters of HY 205 Current Events in the sophomore year in lieu of ROTC.

Group I Electives: AH 200, AS 361, CH 204, CH 205, CH 301, CH 316, EC 200, EC 341, EC 342, EH 253, EH 254, EH 357, EH 358, EH 390, *FL (15 hours), HY 207, HY 208, MH 163, MH 264, PA 202, PA 307, PH 301, PG 211, PO 210 or PO 309 or PO 325, PS 210, SP 211, SY 201, SY 203, VM 200, ZY 404.

Group II Electives: These electives are to be chosen from courses offered by the following departments: AR, BY, DR, EC, EH, GY, HY, MU, PA, PG, PS, SP, SY, and ZY. EED 310 may also be taken.

* A student in PV pursuing the BS degree will take the first course of the 15-hour requirement in a single foreign language here. Students who have satisfactorily completed two years of a foreign language in high school should begin that language at the intermediate level; college credit is not normally granted in such cases in elementary level courses. (See page 221.)

Special Scientific Curricula

Curriculum in Geology (GL)

The rapidly expanding awareness of need for the services of geologists by Federal, state, and municipal agencies, colleges and universities, and private agencies and industries has created a diversified demand for geologists. The increasing importance of including some geoscience subject matter in the secondary public schools has also created a demand for teachers with

some background in geology. The growing interdependence of the scientific disciplines, some fields of law, and other specialties suggests that an adequate background in geology be obtained by many students to meet the needs imposed by their professional career after graduation.

Although the demand for geologists with a bachelor's degree in geology is presently high, it is to the best interests of the student planning a career as a professional geologist to seriously consider the merits of further study and specialization in graduate school. The curriculum in geology at Auburn University is designed primarily to provide the student with a broad, fundamental knowledge of geological principles and sufficient background in related sciences to allow intelligent selection of employment or specialization in graduate school. In addition, the curriculum is flexible enough to allow adequate sampling of courses by non-majors, or the selection of a minor or double minor in geology.

The following four-year curriculum satisfies the requirements for graduation with a Bachelor of Science degree in geology. A minor in geology consists of (1) GL 301, 302, and either 401, 402 or 403, or (2) GL 311, 312 and 401. A double minor consists of GL 301, 302, 401, 402, 403 and either 421 or 422.

FRESHMAN YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
GL 101	Intr. Geol. I .....5	EH 101	English Comp. .....5	EH 102	English Comp. .....5
HY 107	U.S. History .....5	GL 102	Intr. Geol. II .....5	GL 103	Historical Geol. .....5
MH 161	An. Geom. & Cal. I 5 Basic ROTC .....1	MH 162	An. Geom. & Cal. II 5 Basic ROTC .....1	MH 163	An. Geom. & Cal. III .....5 Basic ROTC .....1
PE	Physical Education ..1	PE	Physical Education ..1	PE	Physical Education ..1

SOPHOMORE YEAR

CH 111	Chemistry .....5	Biol. Science* .....5	Biol. Science* .....5
MH 264	An. Geom. & Cal. IV .....5	CH 112	Chemistry .....5
PS 201	Gen. Physics I .....5 Basic ROTC .....1	PS 202	Gen. Physics II .....5 Basic ROTC .....1
PE	Physical Education ..1	GL 201	Geol. Field Meth. ..2 Physical Education ..1

JUNIOR YEAR

GL 301	Mineralogy I .....5	EH 253	Lit. in English .....5	EH 254	Lit. in English .....5
GL 311	Paleozoology .....5	GL 302	Mineralogy II .....5	Group I Elect. .....5	Group II Elect. ....3
PO 209	U.S. Nat. Gov't. .....5	GL 312	Paleobotany .....5	PA 308	Intr. Logic** .....3

SENIOR YEAR

GL 401	Sed.-Sed. Pet.5 Group I Elect.10 Group II Elect.3	GL 402	Str.-Met. Pet.5 Group I Elect.10 Group II Elect.3	GL 403	Ign. Gl. & Pet.5 Group I Elect.5 Group II Elect.3
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Total—210 quarter hours

* Either the sequence BY 101-102, or the sequence ZY 101-102, may be chosen to fulfill the biological science requirement.

** PA 301 and PA 308 are waived for those who complete 18 quarter hours of advanced ROTC.

GROUP I ELECTIVES

BY 306	Fund. Plant Physiology	MH 361	Differential Equation
BY 401	Biological Statistics	PS 303	Optics
BY 406	Systematic Botany	PS 305	Intr. to Modern Physics
BY 413	Gen. Plant Ecology	PS 401	Theoretical Physics I
BY 414	Plant Morphology	PS 402	Theoretical Physics II
CH 204	Analytical Chemistry I	PS 403	Theoretical Physics III
CH 205	Analytical Chemistry II	ZY 300	Genetics
CH 407	Physical Chemistry I	ZY 301	Comparative Anatomy
CH 408	Physical Chemistry II	ZY 308	Micrology
GL 411	Economic Geology I		
GL 412	Economic Geology II		
GL 431	Research Methods and Application		

GROUP II ELECTIVES

These 15 quarter hours of electives must be chosen from 3-or 5-hour courses offered at the 200 or 300 level by the departments of Economics, Foreign Languages***, Geography, History, Philosophy, Political Science, Psychology, Sociology, or Speech.

*** Fifteen hours are required in the same language. Students who have satisfactorily completed two years of a foreign language in high school should begin that language at the intermediate level; college credit is not normally granted in such cases in elementary level courses. (See page 221.)

Curriculum in Mathematics (MH)

This curriculum is designed to prepare students for graduate study and eventual careers as mathematicians.

FRESHMAN YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
EH 101 English Comp.	5	EH 102 English Comp.	5	EH 108 Class. Lit.	5
*FL 121 Elem. French** ..	5	FL 122 Elem. French** ..	5	FL 221 Inter. French ..	5
MH 161 An. Geom. & Cal. I	5	MH 162 An. Geom. & Cal. II	5	MH 163 An. Geom. &	
Basic ROTC .....1		Basic ROTC .....1		Cal. III	5
PE Physical Education ..1		PE Physical Education ..1		Basic ROTC .....1	
				PE Physical Education ..1	

SOPHOMORE YEAR

EH 253 Lit. in English ....5	EH 254 Lit. in English ....5	MH 222 Intr. Anal. III ....5
MH 220 Intr. Anal. I*** ..5	MH 221 Intr. Anal. II ....5	Philosophy Elec. ....5
PS 201 Gen. Physics I ....5	PS 202 Gen. Physics II ....5	PS 203 Gen. Physics III ....5
Basic ROTC .....1	Basic ROTC .....1	Basic ROTC .....1
PE Physical Education ..1	PE Physical Education ..1	Physical Education ..1

Women students will take PE 111-112-113 Health Science in the freshman year and 3 quarters of HY 205 Current Events in the sophomore year in lieu of ROTC.

JUNIOR YEAR

*FL 151 Elem. German** ..5	FL 152 Elem. German** ..5	FL 251 Inter. German ....5
MH 331 Intr. Mod. Alge. I	MH 332 Intr. Mod. Alge. II	MH 333 Intr. Mod. Alge. III
MH 428 Lin. Diff. Systems ..5	HY 207 World History ....5	HY 208 World History ....5
PA 301 Intr. Philosophy† ..3	Elective .....3	Elective .....3

SENIOR YEAR

MH 437 Linear Algebra ....5	MH 443 Linear Geom. or	MH Elective .....5
*Elect. I Sequence ..5	MH 444 Comb. Geom., Pl. or	Elect. I Sequence ..5
Group II Elect. ....5	MH 447 Found. of Geom. ....5	Group II Elect. ....5
Elective .....3	Elect. I Sequence ..5	Elective .....3
	Group II Elect. ....5	
	Elective .....3	

Total—210 quarter hours

* The order in which these sequences are taken may be interchanged.

** The French sequence may be replaced by 15 hours of Russian. Fifteen hours are required in the same language. Students who have satisfactorily completed two years of a foreign language in high school should begin that language at the intermediate level; college credit is not normally granted in such cases in elementary level courses. (See page 221.)

*** Transfer students who have had as much as 20 quarter hours of analytical geometry and calculus may take MH 420-21-22 in lieu of MH 220-21-22.

PA 301 is not required of students who complete the advanced ROTC program.

Elective I Sequence. These electives are to include any one of the following sequences:

- (a) PS 305 Introduction to Modern Physics, PS 401 Theoretical Physics I (mech.), PS 402 Theoretical Physics II (mech.), (b) ZY 101, ZY 102 General Zoology, ZY 300 Genetics or BY 401 Biological Statistics, (c) BY 101, BY 102 General Botany, ZY 300 Genetics or BY 401 Biological Statistics, (d) CH 103, 103L, 104, 104L, and 105, 105L, General Chemistry, or CH 207 Organic Chemistry.

Group II Electives. The student must consult with the Department of Mathematics on the selection of these electives. They are used to meet the needs and interests of the individual students in line with fulfilling the objectives of this curriculum. They must be taken in the biological, physical or social sciences, literature, languages, history, education or mathematics.

Curriculum in Physics (PS)

The significant role of physics in the development and advancement of modern science is mirrored in the continual demand for scientists with outstanding preparation in the field. Opportunities for a rewarding career in this field are to be found in industrial and governmental laboratories, both in pure and applied research. In addition, the continued increase in college and university enrollments will provide excellent opportunities for persons in the field desiring a career in teaching and/or research at the college or university level.

The curriculum in Physics is designed to provide a fundamental preparation for persons desiring to pursue a career in the areas described above. It also provides an excellent foundation for persons seeking to pursue graduate work in physics. An outstanding feature of the curriculum is the research participation during the senior year wherein an investigation of one or more basic experimental problems is undertaken in conjunction with the research group of a member of the senior staff of the department.

Excellent laboratory and library facilities are available for use in support of the analytical and experimental problems which the student would encounter.

Inquisitive young men and women, with exceptional abilities in mathematics and physical science and special aptitudes for research, will find the Physics curriculum a challenging inducement to test their competence and to strive for high goals of attainment.

FRESHMAN YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
CH 111	Chemistry 5	CH 112	Chemistry 5	CH 113	Chemistry 5
HY 107	U.S. History 5	EH 101	English Comp. 5	EH 102	English Comp. 5
MH 161	An. Geom. & Cal. I* 5	MH 162	An. Geom. & Cal. II 5	MH 163	An. Geom. & Cal. III 5
PE	Physical Education ..1	PE	Physical Education ..1	PE	Physical Education ..1

SOPHOMORE YEAR					
EH 253	Lit. in English 5	FL 121	Elem. French** 5	FL 122	Elem. French** 5
MH 264	An. Geom. & Cal. IV 5	MH 361	Diff. Equations 5	MH 362	Engr. Math. I 5
PS 201	Gen. Physics I 5	PS 202	Gen. Physics II 5	PS 203	Gen. Physics III 5
PE	Basic ROTC 1	PE	Basic ROTC 1	PE	Basic ROTC 1
Physical Education ..1		Physical Education ..1		Physical Education ..1	

Women students will take PE 111-112-113 Health Science in the freshman year and 3 quarters of HY 205 Current Events in the Sophomore year in lieu of ROTC.

JUNIOR YEAR

FL 151	Elem. German** 5	FL 152	Elem. German ** 5	PS 303	Optics 5
MH 404	Engr. Math. III 5	PS 302	Electronics 5	PS 415	Quant. Mech. 5
PS 301	Inter. Elec. & Mag. 5 Elective 3	PS 305	Modern Physics 5 Elective 3	Group Elective 5	Elective 3

SENIOR YEAR

PS 401	Theoretical Phys. I 5	PS 402	Theo. Physics II 5	PS 405	Nuclear Phy. 5
PS 412	Sem. in Mod. Physics 1	PS 404	Thermodynamics 5	PS 407	Adv. Lab. II 2
	Group Elective 5	PS 406	Advanced Lab. I 2	Group Elective 5	Elective 3
	Elective 5	Group Elective 5		Elective 3	
	Elective 3			Elective 3	

Total—210 quarter hours

* Students not prepared for MH 161 must take MH 160 without credit.

** Students who have satisfactorily completed two years of a foreign language in high school should begin that language at the intermediate level; college credit is not normally granted in such cases in elementary level courses. (See page 221.)

GROUP ELECTIVES

CH 204	Analytical Chem. I & Lab. [†]	PS 409	Intr. to Reactor Physics I
CH 407	Physical Chemistry	PS 410	Intr. to Reactor Physics II
CH 408	Physical Chemistry	PS 413	Intr. to X-Ray Crystallography
MH 403	Engr. Math. II	PS 414	Electron Optics & Microscopy
MH 405	Matrix Theory Applications	PS 421	Advanced Electronic Circuits
MH 460	Intr. to Numerical Analysis I	PS 435	Intr. to Solid State
PS 304	Applied Spectroscopy	PS 470	Health Physics
PS 403	Theoretical Physics III		

[†] Credit for CH 204 allowed only if CH 407 and CH 408 are completed.

Curriculum of Applied Physics (APS)

This curriculum, like that in Physics, provides a solid foundation in physics. In addition, it emphasizes related technical fields to provide a broader base for persons who desire to enter industrial and governmental research laboratories following receipt of the undergraduate degree. Persons wishing to pursue graduate work will find this curriculum also provides excellent preparation for advanced study.

During the junior and senior years, seven courses are designated as "technical electives." These are to be chosen from one of the following areas: chemistry, aerospace, geology, electrical or mechanical engineering. If the courses chosen comprise less than 20 quarter hours, the remainder are to be taken as electives.

FRESHMAN YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
CH 111	Chemistry 5	CH 112	Chemistry 5	CH 113	Chemistry 5
HY 107	U.S. History 5	EH 101	English Comp. 5	EH 102	English Comp. 5
MH 161	An. Geom. & Cal. I ^o 5	MH 162	An. Geom. & Cal. II 5	MH 163	An. Geom. & Cal. III 5
PE	Basic ROTC 1	EG 102	Eng. Drawing 2	PE	Basic ROTC 1
	Physical Education .. 1		Basic ROTC 1	PE	Physical Education .. 1
		PE	Physical Education .. 1		

SOPHOMORE YEAR

EH 253	Lit. in English 5	ME 205	Statics ^{**} 4	ME 321	Dynamics ^{**} 4
MH 264	An. Geom. & Cal. IV 5	MH 361	Diff. Equations 5	MH 362	Engr. Math. I 5
PS 201	Gen. Physics I 5	PS 202	Gen. Physics II 5	PS 203	Gen. Physics III 5
PE	Basic ROTC 1		Basic ROTC 1	PE	Basic ROTC 1
	Physical Education .. 1	PE	Physical Education .. 1	PE	Physical Education .. 1

Women students will take PE 111-112-113 Health Science in the freshman year and 3 quarters of HY 205 Current Events in the Sophomore year in lieu of ROTC.

JUNIOR YEAR

EE 263	Circuit Analysis I 5	PS 305	Modern Physics 5	PS 415	Intr. Quant. Mech. .. 5
MH 404	Engr. Math. III 5	PS 302	Electronics 5	PS 303	Optics 5
PS 301	Inter. Elec. & Mag. 5		Technical Elective .. 5		Technical Elective .. 5
IL 419	Utilization of Tools 1		Elective 3		Elective 3
	Elective*** 3				

SENIOR YEAR

PS 401	Theo. Physics I 5	PS 402	Theo. Physics II 5	PS 435	Solid State 5
PS 412	Sem. in Mod. Phys. I	PS 404	Thermodynamics 5	PS 407	Advanced Lab. II .. 2
	Technical Elective .. 5	PS 406	Advanced Lab. I 2		Technical Elective .. 5
	Technical Elective .. 5		Technical Elective .. 5		Technical Elective .. 5
	Elective 3				

Total—210 quarter hours

* Students not prepared for MH 161 must take MH 160 without credit.

** Students taking related courses in chemistry will take CH 303 (Organic Chemistry) instead of ME 205 and CH 304 (Organic Chemistry) instead of ME 321.

*** Students anticipating graduate work should use 10 hours of technical electives and an equal number of free electives to complete at least 10 hours in each of two foreign languages: French, German or Russian. Otherwise, free elective credits (up to 12 hours) must be earned in the areas of Philosophy, Literature, History, the Social Sciences, or the Fine Arts. (Students taking advanced ROTC may schedule their military courses within the 12 hours of free electives and one of the technical electives.)

TECHNICAL ELECTIVES

In parenthesis following a course title are numbers indicating when the course should be taken. Example: (3-2) means the course should be taken during the junior year in the second quarter.

AE 301 Basic Aerodynamics	(3-1) 5	ME 208 Strength of Materials I	(3-1) 4
AE 404 High Speed Aerodynamics	(4-1) 5	ME 322 Dynamics	(3-2) 4
AE 405 Boundary Layer Theory	(4-2) 3	ME 324 Fluid Mech. I	(3-3) 4
AE 413 Theoretical Aerodynamics	(3-3) 5	ME 325 Fluid Mech. II	(4-1) 4
AE 414 Equilibrium Gasdynamics	(4-3) 3	ME 335 Metallurgy	(4-2) 4
AE 415 Rocket and Jet Propulsion	(4-1) 5	ME 421 Heat Transfer	(4-3) 4
AE 431 Astronautics	(4-3) 5	ME 450 Special Problems	1-5
CH 204 & Lab. Analytical Chem. If	(3-3) 5	MH 367 Math. Statistics I	5
CH 305 Organic Chemistry	(3-2) 5	MH 403 Eng. Mathematics II	5
CH 407 Physical Chemistry	(4-1) 5	MH 405 Matrix Theory & Applications	5
CH 408 Physical Chemistry	(4-2) 5	MH 428 Linear Differential Systems	5
CH 409 Physical Chemistry	(4-3) 5	MH 460 Numerical Analysis I	5
CH 410 Inter. Inorganic Chem. I	(3-1) 5	MH 461 Numerical Analysis II	5
CH 412 Chemical Thermodynamics	(4-2) 5	PS 304 Applied Spectroscopy	5
EE 361 Circuit Analysis II	(3-2) 5	PS 403 Theor. Physics III	5
EE 362 Circuit Analysis III	(3-3) 5	PS 405 Nuclear Physics	5
EE 363 Dist. Systems	(4-1) 5	PS 408 Advanced Lab. III	2
EE 373 Elec. and Com. II	(4-1) 5	PS 409 Intr. to Reactor Physics I	5
EE 443 Solid State Electronics	(4-2) 3	PS 410 Intr. to Reactor Physics II	5
EE 444 Digital Computers	(4-3) 3	PS 413 X-Ray Crystallography	5
EE 471 Elec. and Com. III	(4-2) 5	PS 414 Electron Optics	5
GL 301 Mineralogy I	(3-1) 5	PS 417 Intr. to Biophysics	4
GL 302 Mineralogy II	(3-2) 5	PS 421 Adv. Electronic Circuits	5
GL 401 Sedimen.-Sed. Petrology	(4-1) 5	PS 470 Health Physics	5
GL 402 Strat. Geology-Met. Petrology	(4-2) 5		
GL 403 Igneous Geology & Petrology	(4-3) 5		

† Credit for CH 204 allowed only if CH 407 and CH 408 are completed.

Curriculum in Psychology (PG)

The curriculum in Psychology provides undergraduate preparation in the science of behavior and a liberal education in the natural and social sciences and the humanities. A major in Psychology requires 41 quarter hours. These include PG 211, 212, 215, 320, 321, 322, and at least 16 hours in courses having 400 numbers, excluding PG 461.

Fifty hours in Mathematics and Science are required and will normally include: 10 hours selected from VM 220, VM 221, ZY 300, ZY 301, or ZY 302; 15 hours of laboratory courses in chemistry or physics; and mathematics through MH 161. Ten hours each in physics and chemistry may be substituted for 15 hours in one. Exceptions to these requirements may be approved by the department head for students who wish to acquire substantial depth in a single scientific discipline or in mathematics.

Language requirements include 10 hours of English composition and completion of fifteen hours in French, German, Russian, or Spanish. Forty-four hours must be completed in humanities and social sciences including 10 hours each in world history (HY 207-208), sociology (SY 201-203), philosophy (PA 400 and elective), and five hours of political science. Remaining courses in the humanities and social sciences must be approved by the student's adviser.

A minor of at least 20 hours beyond the general requirements listed above is required. The minor may be entirely in one field or may be drawn from several fields with the approval of the department head. In either case, the minor must include some advanced work in the area, and in the case of a minor covering more than one area, all courses must contribute to a unified program.

Exceptions to these requirements and substitutions for specific courses identified above may be made with the approval of the department head. Such exceptions will typically be made for students who wish to pursue more vigorous programs or for students who transfer from other curricula late in their undergraduate work.

FRESHMAN YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
EH 101 English Comp. ....5		EH 102 English Comp. ....5	MH	Math. Requirement	
MH 160 Algebra & Trig. ....5		MH 161 Anal. Geom. &		or Elect. ....5	
ZY 101 Gen. Zoology .....5		Cal. I .....5	PG 211	Intr. to Psy. I .....5	
Basic ROTC .....1		ZY 102 Gen. Zoology .....5		Science Require. ....5	
PE Physical Education ..1		Basic ROTC .....1		Basic ROTC .....1	
		PE Physical Education ..1	PE	Physical Education ..1	

SOPHOMORE YEAR

*FL I For. Language .....5	FL II For. Language .....5	FL III For. Language .....5
PG 212 Intr. to Psy. II .....4	Human-Social	Science Require. ....5
Science Require. ....5	Science Require. ....5	PG 215 Quant. Methods
Basic ROTC .....1	Science Require. ....5	in Psychology .....4
PE Physical Education ..1	Basic ROTC .....1	Human-Social
	PE Physical Education ..1	Science Require. ....3
		Basic ROTC .....1
		PE Physical Education ..1

Women will substitute PE 111-112-113 Health Science in the freshman year and electives during the sophomore year in lieu of ROTC.

JUNIOR YEAR

Human-Social	Human-Social	Human-Social
Science Require. ....8	Science Require. ....8	Science Require. ....10
Science .....5	Minor .....5	Minor .....5
PG 320 Exper. Psychol. I ..4	PG 321 Exper. Psycho. II ..4	PG 322 Exper. Psycho. III ..4

SENIOR YEAR

PG Psycho. Require. ....8	Human-Social	Electives .....13-15
Human-Social	Science Require. ....5	PG Psychology .....4
Science Require. ....5	Minor .....5	
Minor .....5	Psychology .....4	
PG	Elective .....3-5	

Total—210 quarter hours

* Fifteen hours are required in the same language. Students who have satisfactorily completed two years of a foreign language in high school should begin that language at the intermediate level; college credit is not normally granted in such cases in elementary level courses. (See page 221.)

Students taking advanced military courses may substitute these in the curriculum as necessary for humanities-social science requirements. The latter may be taken instead of electives during the senior year.

School of Business

O. D. TURNER, *Dean*

THE SCHOOL OF BUSINESS offers course work leading to the Bachelor of Science degrees in Business Administration and Secretarial Administration. The objective of the School is to prepare students for careers in business, government, and higher education. Both a broad prospective of business and a degree of specialization consistent with the requirements of modern enterprise are provided. Emphasis is also given to the liberal arts which are considered essential in enabling students to adjust to change in the modern world.

Instruction

Instruction is offered and students may specialize in the areas of Accounting, Management, Marketing, Finance and Banking, Statistics, Personnel Management, Industrial Relations, Economics, Geography, and Secretarial Administration.

Students following a curriculum or desiring to pursue a curriculum in the School of Business should contact the Dean's Office for advice. Counselors are available to discuss the areas of study. When special advice or counsel is required, students will be referred to the appropriate faculty member or department concerned.

Graduate Studies

The School of Business offers work leading to the following master's degrees: Master of Science (in Business Administration or Economics), Master of Business Administration, and Master of Arts in College Teaching. For further information on these programs, see the Graduate School Bulletin.

Co-Operative Education Program

A co-operative program is offered for the curriculum of Business Administration which provides students an opportunity to integrate their academic training with business experiences. For further information, write the Director, Co-operative Education, 107 Ramsay Hall, Auburn University.

Extension Service

The School of Business through its research and teaching staff is engaged in growing programs of continuing education. These programs, drawing upon resources provided by grants and contracts, serve communities and businesses in the state.

Business Administration (BA)

This program is designed to train for careers in the business world and government. During the first two years, emphasis is given to a liberal arts program of work which is so essential to all college graduates. The four-year curriculum gives the student a systematic introduction to, and understanding

of the major areas of Accounting, Management, Marketing, Finance and Banking, Statistics, Personnel Management, Industrial Relations and Economics. Furthermore, during the junior and senior years, opportunity is given the student to major or concentrate in a particular area of business, thereby qualifying him for more specialized work in business or government. Business management at top, middle and lower levels, increasingly demands the services of the business administration- and commerce-trained graduate.

FRESHMAN YEAR

FIRST QUARTER

SECOND QUARTER

THIRD QUARTER

EC 101	Intr. to Business* ..5	EH 101	English Comp. ....5	EH 102	English Comp. ....5
HY 107	U.S. History .....5	FL 121, 131 or 151,† or		FL 122, 132 or 152,† or	
MH 121	College Math. .....5	Science (ZY 101 or		Science (ZY 102 or	
LY 101	Use of Library .....1	CH 103) and ††5		CH 104) and ††5	
MS	Military Training .....1	MH 122 College Math. .....5		SP 211 Public Speaking .....5	
PE	Physical Education ..1	MS Military Training .....1		MS Military Training .....1	
		PE Physical Education ..1		PE Physical Education ..1	

SOPHOMORE YEAR

EC 200	Prin. of Economics ..5	EC 202	Economics II .....5	EC 274	Statistics .....5
EC 211	Intr. Accounting .....5	EC 212	Intr. Accounting .....5	EC 331	Prin. of Marketing ..5
PO 206	U.S. Government .....5	EH 253	Lit. in English .....5	PG 211	Gen. Psychology or
MS	Military Training .....1	MS	Military Training .....1	SY 201	Intr. to Sociology .....5
PE	Physical Education ..1	PE	Physical Education ..1	MS	Military Training .....1
				PE	Physical Education ..1

JUNIOR YEAR

EC 300	Business Mgt. .....5	EC 341	Business Law .....5	EC 350	Labor Problems .....5
EC 360	Money & Banking ..5		Group Elective .....5	EH 345	Bus. & Prof. Wrtg. 5
IE 301	El. Data Process .....5		Elective** .....5	SA 200	Typewriting I*** .....3
†PA 301	Intr. to Philosophy 3	†PA 308	Intr. to Logic .....3		Elective** .....5

SENIOR YEAR

EC 446	Business Cycles or	Group Elective .....5	EC 463	Corp. Finance .....5	
EC 465	Public Finance .....5	Group Elective .....5		Group Elective .....5	
	Group Elective .....5	Elective** .....5		Elective** .....5	
	Elective** .....5	Elective .....3		Elective .....3	
	Elective .....3				

Total—211 quarter hours

Women students will take Health Science in the Freshman year and Current Events in the Sophomore year in lieu of Military Training.

* Not open to juniors or seniors, or those having credit in EC 200.

† Students with credit for two high school units in a foreign language must begin with the third quarter in that language or take another language.

†† Must include Laboratory.

‡ Not required of students in Advanced ROTC Program.

** Electives chosen in consultation with adviser.

*** If a student has had high school credit in typing, he is not required to take SA 200.

GROUP ELECTIVES

EC 311-12	Intermediate Accounting	EC 437	Sales Management
EC 314	Income Tax Accounting	EC 438	Retail Merchandising
EC 321	Property Insurance	EC 442	Personnel Management
EC 322	Life Insurance	EC 444	Labor Legislation
EC 323	Real Estate	EC 445	Industrial Relations
EC 332	Credits and Collections	EC 446	Business Cycles
EC 342	Business Law	EC 449	Adv. Personnel Administration
EC 400	Industrial Management	EC 451	Intermediate Microeconomics
EC 402	American Industries	EC 452	Comparative Economic Systems
EC 404	Administrative Management	EC 453	Econ. of Growth and Development
EC 411-12	Cost Accounting	EC 454	History of Econ. Thought
EC 414	Adv. Income Tax Accounting	EC 455	Government and Business
EC 416	Auditing	EC 456	Intermediate Macroeconomics
EC 417-18	Advanced Accounting	EC 457	Economic History of Europe
EC 419	Governmental Accounting	EC 458	Economic History of the United States
EC 433	Retail Store Management	EC 460	Economic Development of the South
EC 434	Purchasing	EC 462	Monetary Theory and Policy
EC 435	Advanced Marketing	EC 464	Investments
EC 436	Marketing Research Methods	EC 465	Public Finance

EC 471 Foreign Trade	GY 308 Geography of Africa
EC 472 Economics of Transportation	GY 405 Cultural Geography of the World
EC 473 Traffic Management	GY 407 World Resources
EC 474 Advanced Statistics	IE 302 Production Control Functions
EC 475 Quantitative Methods of Management	IE 310 Work Measurement
EC 476 Motor Transportation	IE 322 Quality Control
EC 480 Business Policies and Administration	PA 440 American Philosophy
AA 417 Airline Operation	PG 461 Industrial Psychology
AA 418 Air Transportation	SA 400 Office Machines
AS 401 Farm Management	SP 273 Group Prob. Solving Through Discussion
AS 460 Intr. to Econometrics	SY 201 Introductory Sociology
GY 304 Geography of South America	SY 401 Population
GY 305 Geography of North America	SY 408 Industrial Sociology
GY 306 Geography of Europe	
GY 307 Geography of Asia	

Secretarial Administration (SA)

The course in Secretarial Administration is designed to meet the needs of those who plan to fit themselves for positions as secretaries or administrative assistants in business, government, and professional offices. The program of work outlined leads to the degree of Bachelor of Science.

FRESHMAN YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
EC 101	Intr. to Business*** 5	EH 102	English Comp. 5	FL 122,	132, 152 or
HY 107	U.S. History 5	MH 121	College Math. 5	Science 5	
EH 101	English Comp. 5	FL 121,	131, 151 or	MH 122	College Math. or
LY 101	Use of the Library 1	Science**** 5		EH 108	Classical Lit. 5
PE 111	Health Science 1	PE 112	Health Science 1	PG 211	Psychology 5
PE	Physical Education ..1	PE	Physical Education ..1	PE 113	Health Science 1
				PE	Physical Education ..1

SOPHOMORE YEAR

EC 200	Gen. Eco. 5	EC 211	Intr. Accounting 5	EC 212	Intr. Accounting 5
SA 210	Shorthand I* 5	SA 211	Shorthand II 5	SA 212	Shorthand III 5
SA 200	Typewriting I or	SA 201	Typewriting II or	SA 202	Typewriting III or ..3
SA 201	Typewriting II** ..3	SA 202	Typewriting III ....3	SA 203	Typewriting IV .....2
SP 316	Parliamentary Pro. ..3	SP 210	Public Speaking ....3	PO 206	U.S. Government .....5
PE	Physical Education ..1	PE	Physical Education ..1	PE	Physical Education ..1

JUNIOR YEAR

EC 274	Statistics 5	EC 331	Prin. of Marketing ..5	SA 400	Office Machines .....5
SA 300	Transcription I 5	SA 301	Transcription II 5	EC 341	Business Law 5
SY 201	Intr. Sociology 5	EH 345	Bus. and Prof. Writing 5	EC 360	Money and Banking 5
PA 301	Intr. Phil. or		Elective 3	SA 305	Records Management 3
PA 308	Intr. Logic 3				

SENIOR YEAR

SA 403	Secretarial Proc. I ..5	SA 404	Secretarial Proc. II 5	EC 404	Adm. Management ..5
IE 301	Elec. Data Proc. .....5	EC 442	Personnel Mgt. .....5	SA 402	Office Appren. .....5
	Elective .....5		Elective .....5		Elective .....5
	Elective .....3		Elective .....3		Elective .....3

Total—213 or 212 quarter hours

* Prerequisite: Typewriting I or equivalent.

** Students with no previous typing experience should take Typewriting I, II, and III. Students with one year in high school, take II, III, and IV. Students with two years in high school should consult with SA staff.

*** Not open to juniors or seniors, or those having credit in EC 200.

**** Students who have credits for two high school units in a foreign language must begin the third quarter's work in that language or take another language.

School of Chemistry

CHARLES RICHARD SAUNDERS, *Dean*

THE SCHOOL OF CHEMISTRY offers four-year curricula leading to the degrees of Bachelor of Science in Chemistry, Chemical Engineering, and Laboratory Technology, and advanced work leading to the degrees Master of Science in Chemistry, and Chemical Engineering and to the Degree Doctor of Philosophy in Chemistry.

The administrative office is located in the Chemistry Building of the Physical Science Center. The Department of Chemical Engineering occupies approximately one-fourth of Wilmore Engineering Laboratory and the basement of Ross Chemical Laboratory. These two buildings are conveniently located with respect to each other and provide modern and adequate facilities.

Department of Chemistry

The curriculum in chemistry meets the standards of the accrediting committee of the American Chemical Society. It prepares and trains students desiring careers in both pure and applied chemistry.

Training is offered in the fundamentals of the science together with advanced courses in chemistry and physics. General electives are selected from fields especially for their cultural value. All electives must be approved by the dean.

Mathematics 160, 121 or 107 must be satisfactorily completed before, or taken concurrently with, General Chemistry 103 or 111.

Curriculum in Chemistry (CH)

FRESHMAN YEAR		
FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
CH 111 General Chemistry ..5	CH 112 General Chemistry ..5	CH 113 General Chemistry ..5
EH 101 English Comp. ....5	EH 102 English Comp. ....5	HY 107 United States Hist. ..5
MH 161 Anal. Geom. & Cal. 5	MH 162 Anal. Geom. & Cal. 5	MH 163 Anal. Geom. & Cal. 5
**LY 101 Library Science ..1	MS Military Training ..1	MS Military Training ....1
MS Military Training ....1	PE Physical Education ..1	PE Physical Education ..1
PE Physical Education ..1		
SOPHOMORE YEAR		
CH 204 Analytical Chem. ....3	CH 205 Analytical Chem. ....5	CH 303 Organic Chemistry ..5
CH 204L Anal. Chem. Lab. 2	MH 361 Diff. Equations .....5	PS 203 General Physics III 5
MH 264 Anal. Geom. & Cal. 5	PS 202 General Physics II ..5	Technical Elective ..5
PS 201 General Physics I ....5	MS Military Training ..1	MS Military Training ....1
MS Military Training ....1	PE Physical Education ..1	PE Physical Education ..1
PE Physical Education ..1		
JUNIOR YEAR		
CH 304 Organic Chemistry ..5	CH 305 Organic Chemistry ..5	CH 409 Physical Chemistry ..5
CH 407 Physical Chemistry ..5	CH 408 Physical Chemistry 5	FL 215 Intermed. German ..5
FL 151 Elem. German .....5	FL 152 Elem. German .....5	PS 305 Modern Physics .....5
Elective .....3	Elective .....3	Elective .....3
SENIOR YEAR		
CH 404 Organic Analysis ....5	CH 411 Intermediate Inorganic Chemistry .....5	CH 413 Anal. Chemistry ..5
(Quantitative)	CH 412 Chemical Thermodynamics .....5	Technical Elective ..5
CH 410 Intermed. Inorganic ..5	EH 390 Adv. Composition ..5	Electives .....8
Electives .....8	Elective .....3	

Total—211 quarter hours

** LY 101 Library Science may be scheduled in any quarter of the freshman year.

Women students will take Health Science in the freshman year and Current Events in the sophomore year in lieu of Military Training.

Advanced military training may be substituted for the three hour humanistic electives in the junior and senior years. Students will be certified to the American Chemical Society as "Certified Graduates" when they have made up the electives for which advanced military training was substituted.

APPROVED ELECTIVES

PO 206 United States Government	5	SP 211 Public Speaking	5
PO 210 State Government	5	EH 253 Literature in English	5

The following alternative curriculum may be selected by those students interested in the biological sciences.

Alternate Curriculum in Chemistry (CH)

(Biochemistry Option)

FRESHMAN YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
CH 111 General Chemistry	5	CH 112 General Chemistry	5	CH 113 General Chemistry	5
EH 101 English Comp.	5	EII 102 English Comp.	5	MH 163 Anal. Geom. & Cal.	5
MH 161 Anal. Geo. & Calc.	5	MH 162 Anal. Geom. & Cal.	5	ZY 101 General Zoology	5
**LY 101 Library Science	1	MS Military Training	1	MS Military Training	1
MS Military Training	1	PE Physical Education	1	PE Physical Education	1
PE Physical Education	1				

SOPHOMORE YEAR

CH 204 Analytical Chemistry	3	CH 205 Analytical Chem.	5	CH 303 Organic Chemistry	5
CH 204L Anal. Chem. Lab.	2	MH 361 Dif. Equations	5	PS 202 General Physics II	5
MH 264 Anal. Geom. & Cal.	5	PS 201 General Physics I	5	ZY 301 Compar. Anatomy	5
ZY 102 General Zoology	5	MS Military Training	1	MS Military Training	1
MS Military Training	1	PE Physical Education	1	PE Physical Education	1
PE Physical Education	1				

JUNIOR YEAR

CH 304 Organic Chemistry	5	CH 305 Organic Chemistry	5	CH 409 Physical Chemistry	5
CH 407 Physical Chemistry	5	CH 408 Physical Chemistry	5	EH 390 Adv. Composition	5
PS 203 General Physics III	5	ZY 424 Animal Physiology	5	VM 200 Gen. Microbiology	5
Elective	3	Elective	3	Elective	3

SENIOR YEAR

CH 418 Biochemistry	5	CH 419 Biochemistry	5	CH 420 Biochemistry	5
FL 151 Elem. German I	5	FL 152 Elem. German II	5	FL 251 Interm. German	5
Electives	8	Electives	8	Electives	8

Total—211 quarter hours

Note: Advanced military training may be substituted for the three hour humanistic electives in the junior and senior years.

** LY 101 Library Science may be scheduled in any quarter of the freshman year.

APPROVED ELECTIVES

HY 107 United States History	5	SP 211 Public Speaking	5
PO 206 United States Government	5	EH 253 Literature in English	5
PO 210 State Government	5		

Department of Chemical Engineering

The rapidly growing chemical industry in the southern region, and more particularly in Alabama, is providing exceptional opportunities for chemical engineering graduates to obtain employment in familiar surroundings and to contribute to the economy and well-being of the state.

Simply stated, the chemical engineer is responsible for producing a chemical product. This may be an individual compound such as an acid, a base or a gas or it may be an industrial product such as paper, synthetic

fibers, polymers, fertilizers, various agricultural chemicals, petro-chemicals or petroleum products.

The program leading to the bachelor's degree in chemical engineering consists almost entirely of broad scientific and engineering principles which have numerous applications in the chemical and related industries. Those students who elect to continue their education through one or more advanced degrees are qualified for better positions and often make more rapid progress than those with only the bachelor's degree.

The broad university training provided, when supplemented by professional experience, enables graduates to qualify for positions as engineers in production, research and development, sales engineering, plant design and management.

The curriculum in chemical engineering is offered under both the regular and the co-operative plan. See the Co-operative Education program.

Curriculum in Chemical Engineering (CN)

FIRST YEAR

FIRST QUARTER

CH 111	General Chemistry	.5	CH 112	General Chemistry	.5	CH 113	General Chemistry	.5
EH 101	English Comp.	.5	EH 102	English Comp.	.5	MH 162	Anal. Geom. & Cal.	.5
MH 160	Algebra & Trig.	.5	MH 161	Anal. Geom. & Cal.	.5	HY 204	History of the Modern World	.3
*LY 101	Use of the Library	1	CN 101	Chem. Engin. Fundamentals (I)	.1	MS	Military Training	.1
MS	Military Training	.1	MS	Military Training	.1	PE	Physical Education	.1
PE	Physical Education	.1	PE	Physical Education	.1		Humanistic Electives	3

SECOND YEAR

CH 204	Quant. Analysis	.3	MH 264	Anal. Geom. & Cal.	.5	CH 303	Organic Chemistry	.5
CH 204L	Quant. Analysis Laboratory	.2	PS 202	Gen. Physics II	.5	MH 361	Diff. Equations	.5
MH 263	Anal. Geom. & Cal.	.5	ME 205	App. Mech.		PS 203	Gen. Physics III	.5
PS 201	Gen. Physics I	.5		Statistics	.4	CN 300	Process Calculations (I)	.3
CN 200	Digital Computers	.2	CN 201	Chem. Engin. Fundamentals (II)	.3	MS	Military Training	.1
MS	Military Training	.1	MS	Military Training	.1	PE	Physical Education	.1
PE	Physical Education	.1	PE	Physical Education	.1		Humanistic Electives	3

THIRD YEAR

CN 301	Process Calculations (II)	.3	CN 324	Fluid Mechanics	.4	CN 326	Heat Transfer	.3
CH 407	Physical Chemistry	.5	CH 408	Physical Chemistry	.5	CN 326L	Heat Transfer Lab.	.2
CH 304	Organic Chemistry	.5	ME 208	Strength of Materials	.4	SP 210	Public Speaking	.3
MH 362	Engin. Math.	.5	EE 304	Electric Circuits	.4	CN 430	Computer Principles	2
or			EH 304	Technical Writing	.3	CN 490	Applied Thermodynamics	.5
MH 367	Math. Statistics	.5					Humanistic Electives	5
or								
MH 460	Numerical Analysis	5						
ME 202	Materials of Engineering	3						

FOURTH YEAR

CN 401	Chemical Engineering Economics	.2	CN 491	Kinetics	.4	CN 484	Chemical Engineering Plant Design	.4
CN 423	Unit Operations	.3	CN 424	Mass Transfer	.3	PS 305	Intr. to Modern Physics	.5
CN 423L	Unit Oper. Lab.	.2	CN 424L	Mass Transfer Lab.	.2		Humanistic Electives	5
CN 432	Instrumentation	.4	CN 437	Process Engineering	.4		Technical Electives	5
CN 426	Engineering Metallurgy	.5						
	Humanistic Electives	3						

Total—229 quarter hours

Six hours of electives, mathematics, or Advanced ROTC, may be substituted for SP 210 (3 hours) and ME 202 Materials of Engineering (3 hours).

* LY 101 Library Science may be scheduled in any quarter of the freshman year.

SUGGESTED ELECTIVES IN HUMANISTIC-SOCIAL STUDIES

EC 200 General Economics	5	MU 373 Appreciation of Music	3
EC 206 Socio-Economic Foundations	3	MU 374 Masterpieces of Music	3
EH 108 Classical Literature	5	PA 301 Intr. to Philosophy	3
EH 350 Shakespeare's Greatest Plays	3	PA 302 Intr. to Ethics	3
EH 365 Southern Literature	3	PA 307 Scientific Reasoning	5
HY 208 World History	5	PA 420 Modern Philosophy	5
HY 322 United States in World Affairs	3	PG 311 The Behavior of Man	3
HY 460 Great Leaders	5		

TECHNICAL ELECTIVES (CN)

CN 202 Chem. Engineering Fundamentals II	5	CN 431 Computer Application	2
CN 322 Chemical Process Industries	4	CN 440 Nuclear Engineering	5

Department of Laboratory Technology

Laboratory Technology Curriculum

This course is designed for men and women who wish to prepare themselves for clinical and other laboratory positions, such as public health, bacteriology, etc. With certain minor revisions, it can be used also as a preparation for the study of medicine or dentistry.

The curriculum is planned for regular students to schedule courses during the Fall, Winter and Spring quarters only. Transfers or freshmen may enter the course at any quarter and use the Summer quarter to fit themselves to the regular program. All who complete the curriculum satisfactorily are eligible to receive the degree Bachelor of Science in Laboratory Technology.

The majority of the graduates enter the field of clinical medicine as medical technologists. They should plan to attain status as Registered Medical Technologists which is accomplished by interning for one year in an approved hospital and then passing the National Registry of Medical Technologists' written examination. If then desired, the additional Bachelor of Science degree in Medical Technology will be granted. The four-year academic curriculum is recommended.

Medical Technology Curriculum

An alternate plan is available for those who plan to become medical technologists and who do not obtain the Bachelor of Science degree in Laboratory Technology. This plan leads to the Bachelor of Science degree in Medical Technology. To qualify, the student must take the first nine quarters of the curriculum, intern for one year in a hospital approved by the American Society of Clinical Pathologists and by the Dean of the School of Chemistry, and pass the course work in the hospital and the National Registry examination. Further requirements are:

(1) The student must complete the first three years of the Laboratory Technology curriculum before interning in an approved hospital in order that the internship can be considered as fulfilling the senior year's residence requirements in lieu of the fourth year on campus.

(2) Auburn University students transferring into Medical Technology must have completed in the Laboratory Technology curriculum one academic year (54 quarter hours) preceding the year of internship.

(3) Students transferring from other institutions into Medical Technology must complete the second and third years of the Laboratory Technology curriculum on campus before interning.

Curriculum in Laboratory Technology (LT)

FRESHMAN YEAR

FIRST QUARTER

CH 103 General Chemistry ..4
CH 103L Gen. Chem. Lab. ..1
MH 121 College Math. ....5
ZY 101 General Zoology ....5
PE 111 Health Science ....1
PE Physical Education ..1
*LY 101 Library Science ..1

SECOND QUARTER

CH 104 General Chemistry ..4
CH 104L Gen. Chem. Lab. ..1
EH 101 English Comp. ....5
ZY 102 General Zoology ....5
PE 112 Health Science ....1
PE Physical Education ..1
LT 101 Orientation .....1

THIRD QUARTER

CH 105 General Chemistry ..3
CH 105L Gen. Chem. Lab. ..2
EH 102 English Comp. ....5
MH 122 College Math. ....5
PE 113 Health Science ....1
PE Physical Education ..1

* LY 101 Library Science may be scheduled in any quarter of the freshman year.

SOPHOMORE YEAR

CH 207 Organic Chemistry ..5
EH 141 Med. Vocabulary ...3
PS 205 Intr. Physics .....5
HY 205 Current Events .....1
PE Physical Education ..1
CH 208 Organic Chemistry ..5
PS 206 Intr. Physics .....5
VM 220 Human Anatomy & Physiology .....5
PE Physical Education ..1
CH 204 Quant. Analysis ....3
CH 204L Quant. Analys. Laboratory .....2
VM 200 General Microbiology .....5
VM 221 Human Anatomy & Physiology .....5
HY 205 Current Events .....1
PE Physical Education ..1

JUNIOR YEAR

CH 418 Biochemistry .....5
LT 301 Hematology .....5
VM 204 Pathogenic Microbiology .....5
Elective .....3
CH 419 Biochemistry .....5
LT 305 Serology .....5
ZY 411 General Parasitology .....5
Elective .....3
CH 420 Biochemistry .....5
HY 107 United States Hist. 5
LT 401 Adv. Hematology .....5
Elective .....3

SENIOR YEAR

EH 345 Business & Professional Writing ....5
LT 421 Diagnostic Apparatus .....5
ZY 308 Micrology .....5
LT 402 Seminar .....3
SP 211 Essentials of Public Speaking .....5
PY 428 Public Health .....5
Group Elective .....5
Elective .....3
LT 405 Adv. Serology .....5
LT 422 Hospital Lab. Practice .....5
ZY 409 Histology .....5
Elective .....3

Total—209 quarter hours

APPROVED ELECTIVES

BY 101 General Botany .....5
BY 102 General Botany .....5
GY 102 Principles of Geography* .....5
EC 211 Introductory Accounting .....5
EC 212 Introductory Accounting .....5
FL 121 Elementary French I .....5
FL 122 Elementary French II .....5
FL 151 Elementary German I .....5
FL 152 Elementary German II .....5
PG 211 Introduction to Psychology .....5
SY 201 Introduction to Sociology .....5
SY 301 Sociology of the Family .....5
ZY 300 Genetics .....5

* Not open to juniors or seniors.

School of Education

TRUMAN M. PIERCE, *Dean*
ROBERT L. SAUNDERS, *Assistant Dean*

THE SCHOOL OF EDUCATION is accredited by the National Council for Accreditation of Teacher Education for the preparation of elementary and secondary teachers and school service personnel with the doctor's degree as the highest degree approved.

Professional preparation programs are provided for service in the fields of curriculum and teaching; administration, supervision, and guidance. Since school service is a profession with various areas of activity, the School of Education provides training in specialized curricula on both the undergraduate and graduate levels. Undergraduate programs lead to the degree of Bachelor of Science in Education. Programs administered by the Graduate School lead to the degrees of Master of Education, the Master of Science, Specialist in Education, and Doctor of Education.

Program and Degrees

Undergraduate

The Department of Vocational, Technical, and Practical Arts Education prepares teachers in vocational agriculture, industrial arts, and in technical education related to post secondary school programs and lead to the degree of Bachelor of Science in Education. Curricula include study in the liberal arts, specialization in the fields of agriculture, industrial arts, or other appropriate subject matter, psychology, educational theory and practice, and laboratory experiences. All curricula require a common core in professional and vocational education.

The Department of Elementary Education prepares teachers for elementary schools. This curriculum leads to the degree of Bachelor of Science in Education and includes study in the liberal arts, psychology, educational theory and practice, laboratory experiences, and provision for concentration of study in one or more subject-matter fields.

The Department of Foundations of Education provides a service function within the School of Education. Undergraduate and graduate courses which relate to the total educational enterprise and which are ordinarily included in the program of study of all students in teacher education are offered through this department. Courses in educational psychology, philosophy, sociology and history of education, and research and experimentation are offered.

The Department of Health, Physical Education, and Recreation prepares teachers of health and physical education. This curriculum leads to the degree of Bachelor of Science in Education and includes study in the liberal arts, psychology, educational theory and practice, laboratory experiences, and specialization in health and physical education.

The Department of Secondary Education prepares secondary school teach-

ers. This curriculum leads to the degree Bachelor of Science in Education and includes study in the liberal arts, specialization in one or more teaching fields, psychology, educational theory and practice, and laboratory experiences. Fields of specialization include Art, Business Education, Dramatic Arts, English, Foreign Languages, Mathematics, Music, Science, School Library Science, Social Science, Speech, Speech Correction, and Vocational Home Economics.

Graduate

Graduate programs are offered through the Graduate School in administration, supervision, and guidance; vocational, technical and practical arts education; elementary education; health, physical education and recreation; and secondary education. A graduate program is also available in school library service.

Fifth-year programs of study in these areas lead to the degrees of Master of Science and Master of Education.

Sixth-year programs in curriculum and teaching, and in administration, supervision, and guidance lead to the degree of Specialist in Education.

A doctoral program leading to the degree of Doctor of Education is offered in the areas of curriculum and teaching; and in administration, supervision and guidance. See Graduate School Bulletin.

Programs leading to the degrees of Master of Education, Master of Science in Education, Specialist in Education, and Doctor of Education are offered for junior college administrators, student personnel administrators and teachers. These programs meet requirements of the Southern Association of Colleges and Schools, the Graduate School and the School of Education. Sufficient flexibility exists to permit students to adapt programs to their individual needs. Course guides for each of the various programs are available in the Office of the Dean of Education.

Related Programs and Services

Teacher Certification Services

Programs in the School of Education are approved by the National Council for Accreditation of Teacher Education and the Alabama State Board of Education for certifying superintendents, supervisors, principals, guidance personnel, elementary and secondary teachers, and school librarians. Upon satisfactory completion of a prescribed course of study and upon recommendation of the Dean of the School of Education a professional certificate will be issued by the appropriate State Department of Education. Thirty State Departments of Education now have reciprocal agreements for issuing certificates to graduates of institutions accredited by NCATE.

Students in other areas of the University may take courses in education and psychology for acquiring knowledge and understanding of human growth and development, the history and purposes of education in America, and teaching as a profession. They are eligible to take all such courses for which they satisfy prerequisites except the internship in student teaching.

Students who do not take the full program of requirements for a professional certificate may qualify for a non-professional certificate which is valid for one year only and cannot be continued or reinstated.

For detailed requirements for the Professional Certificate (Ranks B, A, or AA), Non-Professional, Emergency Professional, and Trades and Industries Certificates, consult the Alabama State Department of Education Bulletin 1966, No. 14, available in the office of the Dean of the School of Education.

Student Personnel Services

Virada K. Schuessler, Coordinator

The Student Personnel Services Program of the School of Education assists the student in understanding the University and becoming a part of it, in identifying his strengths and limitations, in determining his professional goals, in selecting the proper curriculum in the University, and in securing employment upon graduation.

Recruitment. — Able young people are encouraged to consider teaching as a profession. Efforts of organizations such as the Future Teachers of America in the secondary schools and the Student National Education Association in colleges and of individuals and groups in the profession are aimed at seeking out, informing, and encouraging students.

Financial Aid. — Opportunities for financial aid are available in part-time employment and loans. One type of loan, the Student Loan Program financed by the National Defense Education Act, provides low-interest, long-term loan funds that are particularly attractive to School of Education students because of special provision for the prospective public school teacher. The NDEA provides that if a student goes into teaching in a public elementary or secondary school, up to 50 per cent of the principal (plus interest) of the loan may be cancelled.

Information and applications for NDEA loans, other financial aid, and employment may be obtained from the Office of Student Financial Aid.

Orientation. — The Orientation Program provides University personnel with an understanding of the student's background, individuality, and needs. It assists the student in obtaining information about the University and its programs, in learning more about himself, and in selecting professional goals that are compatible with his abilities. All freshmen participate from one to three quarters in an orientation program.

Counseling. — Each Education student is assigned to a faculty adviser who assists the student whenever possible. Other sources of assistance include personnel in the Office of the Dean, classroom teachers, personnel in the Student Counseling Service, the offices of the Dean of Women, the Dean of Student Affairs, the Registrar, dormitory head residents and counselors, and ministers of local churches.

Selection and Retention. — The selection and retention program is continuous. It inducts and retains students who show promise of success in teaching.

Students admitted as freshmen, who plan to prepare to teach, should enroll in the two-year pre-professional program in Education. The program consists of 90 quarter hours of appropriate general education and other courses selected in relation to the student's professional objective. During the pre-professional program students are assisted through orientation, counseling, and

regular courses to examine their strengths and limitations. They evaluate these in relation to the factors affecting academic and professional success.

Admission to a Teacher Education Curriculum. — Student must submit a written application to the Committee on Selection and Admission to Teacher Education. Students may make application no earlier than the quarter after which they have completed 85 quarter hours and should make application before they have earned a total of 100 quarter hours. Criteria of selection: evidence of adequate scholastic ability, grade point average of 1.0 (C) on all work earned that is applicable to pre-professional program, completion of curriculum requirement up to time of application, evidence of proficiency in English, satisfactory potential for teaching, and evidence of emotional stability and lack of undesirable personal characteristics.

Transfer students must apply for admission to teacher education as outlined above and must meet the criteria as outlined. All transfer students are expected to complete satisfactorily at least one quarter (minimum of 15 quarter hours) in the School of Education prior to making application for admission to teacher education.

At the end of the junior year students who have been admitted to teacher education must apply for admission to student teaching. Those applicants who meet the criteria will be admitted to student teaching.

Persons with degrees other than in education may make application for study in a curriculum leading to professional certification. Programs of study are available for earning the Class B and A Certificates and the master's degree. Often, work experiences in the teaching profession and other professional fields permit alternative plans for fulfilling the requirements in a particular program of study. Academic background and work experience are evaluated for purpose of developing the most effective program possible for each student.

Applications and specific information about the criteria of selection for admission to teacher education are available from the Student Personnel Office, 203 Thach Hall.

Placement and Follow-Up. — The Teacher Placement Service provides, free of charge, assistance to prospective teachers in locating desirable positions and assistance to employers in identifying candidates. Persons interested in placement should contact the Student Personnel Office, 203 Thach Hall. Follow-up studies of successes, failures, and problems of graduates are made. Further information may be obtained from the Coordinator of Student Personnel Services, 203 Thach Hall.

Field Services

Wayne Teague, Coordinator

Field Services constitute the phase of the work of the School of Education which is designed to make the programs and services of the School available to individuals and groups off campus. Field Services enable the School to combine its three major functions: instruction, research, and extension; and make them available to off-campus groups for continuous improvement of public education in the State and region. Major categories of services are available. These follow:

Off-Campus Instruction.—This instruction is available through the Field Laboratory Program, enabling teachers in service to complete a total of 16 quarter hours of residence credit toward a graduate degree. The program uses the local school setting as a laboratory in which graduate courses are provided as a framework for solving instructional problems related to various areas of study. The program may be used as a supplement to existing in-service programs or as a basis for developing such programs.

Short courses may also be offered on a non-credit basis for groups interested in specific areas of education and psychology. The courses may consist of a series of lectures or workshops and are available to groups of professional and non-professional personnel interested in short courses in some specific aspect of their work.

Educational Television.—Resources and materials of the School of Education are presented to Alabama citizens through the facilities of the Alabama Education Television Network. Telecasts direct and enrich teaching programs for elementary and secondary school students, and assist teachers in their professional career development programs.

Further information regarding Educational Television at Auburn University is contained elsewhere in this Bulletin. A schedule of courses and specific course study guides may be obtained by writing the Director, Educational Television, Auburn University.

Lecture and Consultative Service.—The staff of the School of Education is composed of persons who are skilled in general and specific areas of education. The Office of Field Services coordinates the services of these faculty members for lecture and consultative services. These services may be used with in-service education, school and community projects, teacher workshops and institutes, and community clubs and organizations.

School Surveys.—School systems desiring comprehensive school surveys or surveys in specific areas of education such as school plant utilization and construction, school finance, administrative organization, and curriculum and teaching programs, may secure services of this type from the School of Education. Surveys may be conducted as separate projects or in conjunction with the Field Laboratory Program described above.

Research Services.—School systems may wish to conduct research in such areas as the instructional program, administrative and supervisory patterns and organizations, school and community projects, the development and evaluation of testing programs, and the use of instructional materials and facilities. The assistance of the staff of the School of Education is available for these activities, either as separate endeavors or in conjunction with the instructional and survey services described above.

Correspondence Study.—Correspondence study provides undergraduate instruction for persons unable to attend college on a regular basis. Courses parallel to those given on campus are available in English, education, economics, health, physical education and recreation, history, mathematics, psychology, and sociology. Other courses may be added as the demand warrants. All the courses carry college credit. For information concerning the Correspondence Study Program of Auburn University, see page 42 of this Catalog.

Learning Resources Center

Coordinator Marvin Dawson

Associate Professors Thomas E. Miller, Charlene Swarthout

Administrative Assistant George W. Brinkley

Assistant Professors Elizabeth J. Cahoon, Melvin Knight

Instructors Sharon M. Hill, Wade A. Rogers III, Patricia A. Mobbs,

Dorothy L. Pearce, and Clara Szilassy

Social Studies Specialist Dennie L. Smith

Art Music Specialist Judith G. Larka

The Learning Resources Center of the School of Education contains an extensive collection of materials for teaching and learning. These resources complement the materials in the University Library. Varied in nature, they range from selected printed publications to graphic productions. Included are such materials of instruction as transparencies for projection, record players, tape recorders, overhead projection equipment and supplies, television receiving sets, and printed references.

The Learning Resources Center is a service center created primarily to improve instruction through effective use of appropriate materials. Personnel assists faculty and students in producing, selecting, and using these learning resources.

Education Interpretation Service.—A phase of the Learning Resources Center is the Education Interpretation Service. Devoted to better communication through the printed page, it aids public agencies and schools in improving their publications, publicity, and educational materials. It also provides readability analyses of textbooks, editorial services, and publication facilities.

In-Service Agricultural Education and Supervision

Thurston L. Faulkner, State Supervisor

*Ben P. Dilworth, Howard W. Green, Paul B. Holley, A. H. Halcomb,
Homer N. Lewis, and Lewis L. Sellers, Assistant Supervisors*

In cooperation with the State Department of Education, the School of Education maintains an in-service teacher education and supervisory division. This service extends to 345 departments of vocational agriculture in accredited high schools of the State and to more than 25 teachers of veterans.

Vocational Rehabilitation Service

Assistant Area Supervisor, Frank W. Jenkins

District Supervisor, J. Hoyt Roberts

Counselor, Joseph R. Lambert

The State Department of Education in cooperation with Auburn University maintains the local Rehabilitation Service which provides vocational guidance, counseling, training and placement services to handicapped citizens. The Rehabilitation Service also makes available to handicapped citizens such services as: surgical and/or medical care, hospitalization, therapeutic treatment and artificial appliances, when these services are essential to training and/or employment and the individual is not financially able to secure them.

Undergraduate Curricula For The Preparation Of Teachers

These materials set forth requirements and guides for the development of programs for students pursuing a teacher education curriculum. Requirements for the pre-professional program, the program of professional education, and the fields of teaching specialization are stated. Listed also are total credit requirements, recommended courses, and provisions for electives in the different preparation programs.

Students who intend to teach should register in the School of Education when they enroll at Auburn. However, students from other divisions of the University and from other colleges who decide to teach may transfer to the School of Education at a later time. Graduates from two-year curricula of approved colleges normally enter the junior year.

Early registration in the School of Education clarifies the student's plans and strengthens his preparation for teaching. He should plan his program in conference with his adviser by the beginning of his sophomore year.

I. Pre-Professional Requirements

The pre-professional program as outlined here partially fulfills the liberal arts requirement for students preparing to enter a teacher preparation program leading to professional certification as a teacher in elementary and/or secondary schools. A major portion of the pre-professional requirement will be completed prior to admission to the teacher education program.

EH 101-2 English Composition	10	Social Science
*EH 253-54 Literature in English	10	
MS Military Training (Men)	6	Elementary Majors—Study in three or more fields selected from history, economics, political science, sociology and geography
PE Physical Education (Men)	6	35
PE Physical Education (Women)	9	
AT 342 Elem. School Art (Elementary majors only)	5	
FED 213 Growth and Development of School Age Children	5	Secondary Majors—Study in two or more fields selected from history, economics, political science, sociology and geography
FED 214 Educational Psychology	5	20
SP 451 Prins. of Speech Correction (Elementary majors only)	5	
MH 281 Fundamental Mathematics I or approved mathematics elective	5	
MU 371 Intr. to Music (Elementary majors only)	3	Science
102-3-4 Orientation	3	Physical 10
		Biological 10

* Majors in health, physical education and recreation will take one course in speech instead of EH 254. Majors in agricultural education will take one course in speech and one course in journalism instead of EH 253-54.

II. Professional Requirements

This phase of the teacher preparation program develops competence in the content of professional education. It adds depth of understanding and gives social meanings to the knowledge one possesses. It is concerned with the individual, the nature of society and the functions of education in society. Through the study of professional literature, observations, and actual experience in teaching, the student acquires knowledge regarding the history and philosophy of education, the administration and organization of schools, curriculum development, teaching and learning processes, learning resources, and the evaluation of teaching effectiveness.

A. Foundations of Education

This field of teacher preparation provides background information essential to effective participation in the teaching profession. Formal classwork includes an analysis of historical, philosophical, and sociological considerations upon which the educational enterprise is based. Pertinent concepts, principles, and understandings are applied to the operation of public school systems for evaluating the professional tasks associated with the education program.

Laboratory requirements are met, in part, by making planned observations in public schools near the campus and by active involvement in the work of an elementary or secondary school through the Pre-Teaching Field Experience. This experience, a prerequisite for student teaching, requires at least two weeks, involves the student in planning and evaluating learning experiences, counseling, participation in pre-school conferences and faculty study, school and community meetings, and actual teaching.

All students in the teacher preparation program will complete FED 200 Foundations of Education, 4 hours; FED 300 Principles and Practices in Education, 4; and FED 490 Evaluation in Education, 3.

B. Student Teaching 10 or 15 Quarter Hours

The Student Teaching Program provides students with a student teaching internship in an off-campus school situation. Experiences include personal and professional contacts with the different aspects of community life and making application of concepts, skills, and knowledge of classroom situations.

The program is organized on a quarter basis in which the regular student enrolls for 15 credit hours and devotes full time during the quarter to the experience. The program is divided into three phases: orientation, off-campus experience and evaluation. The student should have completed a large part of the work in both the major and minor areas of specialization prior to taking Student Teaching.

The Student Teaching Program for students with a major or minor in art; dramatic arts; health, physical education and recreation; industrial arts; music; speech and/or special education, including speech correction and mental retardation, requires experience in both elementary and secondary schools.

Students in either secondary or elementary education who complete a minor in school library science are required to devote a part of their student teaching to appropriate experiences in the school library.

Students who have had teaching experience or other related experiences may be permitted to satisfy the student teaching requirement through special student teaching programs which are offered in lieu of the regular Student Teaching Program. Such cases will be considered on an individual basis in terms of the student's previous experiences.

EED 426 Student Teaching in Secondary School

IED 425 Student Teaching in Elementary and Secondary Schools

HPR 425 Student Teaching in Health and Physical Education in Elementary and Secondary Schools

SED 425 Student Teaching in Secondary School

VED 425 Student Teaching

(T) Industrial Arts in Elementary and Secondary Schools

(U) Agricultural Education

C. Teaching and Program

Study in this part of the teacher preparation program provides the student with knowledge, understanding, and skills associated with his field of teaching specialization. Specifically, these competencies are developed in relation to curriculum development, methodology, teaching and learning resources, and evaluation of teaching effectiveness. Each student in the teacher preparation program will complete the courses listed under the area of the school program in which he is preparing to teach.

1. Elementary Education

EED 329 Creative and Recreational Expression.....	6
EED 370 Teaching Elementary School Math	4
EED 421 Developing Understandings of the Natural and Social Environment	6
EED 371 Teaching Reading and Other Language Arts	6

2. Secondary Education

*SED 405 Teaching in Secondary School, or	SED 405 Teaching in Secondary School, or
IED 414 Teaching in Elementary and	SED 410 Program in Secondary School
Secondary Schools (Major Field)	(Minor Field) 3
*SED 410 Program in Secondary School, or	IED, HPR, or VED 414 Teaching in Ele-
IED 423 Program in Elementary and	mentary and Secondary School, and
Secondary Schools (Major Field)	IED, HPR, or VED 423 Program in
	Elementary and Secondary Schools
	(Minor Field) 6

* Teaching and Program courses SED 407 and SED 412, are required in major for students in home economics education.

3. Vocational, Technical and Practical Arts Education

a. Agricultural Education

VED 446 Teaching Agriculture.....	5
VED 466 Teaching Out-of-School Groups.....	5
VED 456 Teaching Aids in Agricultural Education.....	4

b. Industrial Arts Education

VED 346 Voc. and Pract. Arts Education	3	SED 405 Teaching in Secondary School, or
VED 414 Program and Teaching	5	SED 410 Program in Secondary School
VED 423 Program in Basic Vocational		(Minor Field) 3
Education (Major Field)	3	or
VED 485 Audio-Visual Materials	5	IED or HPR 414 Teaching in Elementary
		and Secondary Schools, and
		IED or HPR 423 Programs in Elementary
		and Secondary Schools
		(Minor Field) 6

4. Health, Physical Education and Recreation

HPR 414 Teaching in Elementary and	SED 405 Teaching in Secondary Schools, or
Secondary School, and	SED 410 Program in Secondary School
	(Minor Field) 3
	or
HPR 423 Program in Elementary and	IED or VED 414 Teaching in Elementary
Secondary Schools (Major Field)	and Secondary Schools, and
	IED or VED 423 Program in Elementary
	and Secondary Schools
	(Minor Field) 6

III. Requirements for Major and Minor Fields of Specialization

Study in a major and/or minor field of specialization helps students develop the academic competencies needed for entering the teaching profession with qualifications for teaching in one or more areas of the school program.

A student preparing to teach only at the secondary school level is required to complete a major and a minor field of specialization.

A student enrolled in either elementary or secondary education may prepare to teach in selected fields on a twelve-grade basis. These fields of specialization are art; dramatic arts; health, physical education and recreation; industrial arts; music; speech and/or special education, including speech correction and mental retardation; and school library science. Students in secondary education with a major and/or minor selected from these fields will qualify also for teaching in the elementary school in the major and/or minor field selected. Students with a major in elementary education, through the concentration of electives, may qualify for teaching in the secondary school in one of these fields by completing the elementary education curriculum and a subject-matter concentration of 27 to 30 hours in the field selected.

Secondary and elementary education students interested in qualifying to teach in one area of the secondary school program, should study with care the respective fields for specialization with a view of selecting the most appropriate teaching field or fields.

Requirements listed below represent minimum hours for a major and a minor in the respective fields of specialization. The number of hours listed for each field of specialization is exclusive of courses completed in pre-professional and professional education. The requirements also exclude the use of any course as partial fulfillment for both the major and the minor field of study.

Subject	Minor	Major
Agricultural Education		76
Art	35-40	45-60
Basic Vocational Education		
Basic Agriculture	28	43
Basic Building Construction	28	43
Basic Distributive Business	26	44
Basic Metals Technology	29	43
Basic Power Mechanics	29	44
Business Education		
General Business	35	66
Office Administration	35	66
Distributive Education		63
Drama	32	95
English	20	40
Health, Physical Education and Recreation	40	55
Industrial Arts Education	37	59
Mathematics	35	55
Modern Languages	30	40
Music	30	60
Composite Major-Minor		
Instrumental and Choral		90
Choral and Elementary School Music		90
School Library Service	28-30	
Science		
General Science	20	40
Biological Science	20	45
Physical Science	20	45
Social Science		
General Social Science	20	40
Composite Major-Minor		65
Economics	25	40
Geography	25	40
Sociology	25	40
History	25	40
Speech and/or Special Education, including Speech Correction and Mental Retardation	32	40-50
Trade and Industrial Education		45
Vocational Home Economics		63

Students pursuing a preparation program for teaching in the secondary school only or for teaching in specific fields in both elementary and secondary school programs will complete the subject-matter requirements as listed under the field or fields in which the student is preparing to teach.

AGRICULTURAL EDUCATION

Major: 76 Hours

VED 246 Instructional Drawing	3
VED 404 Pract. in General Metals	5
VED 406 Pract. in Building Construction and Maintenance	5
VED 407 Pract. in Electricity	5
HF 201 Orchard Management	5
HF 221 Landscape Gardening	5
AN 204 Animal Nutrition	5
AN 303 Farm Machinery and Equipment	5
AH 303 Livestock Production	5
FY 313 Farm Forestry	5
AS 401 Farm Management	5
AY 307 General Soils	5
AS 301 Agri. Marketing	5
AY 401 Forage Crops	5
AS 410 Agricultural Business Management	3
Approved Elective	5

ART

Minor: 35 or 40 Hours

AT 105 Drawing I	5
AT 106 Drawing II	5
AT 181 Design Fundamentals I	5
AT 182 Design Fundamentals II	5
AT 222 Painting I	5
AT 338 Art History I	5
AT 342 Elementary School Art	5
AT Approved Elective	5

Major: 45 or 60 Hours	
Minor Requirements	35
AT 322 Painting III	5
AT Approved Elective	5
AT Approved Electives	15

BASIC VOCATIONAL EDUCATION

A. Basic Vocational Education

Minor: 28 Hours

HF 221 Landscape Gardening	5
HF 224 Plant Propagation	5
AH 204 Animal Nutrition	5
AS 401 Farm Management	5
AS 410 Agriculture Business Management	3
AY 307 General Soils	5

Major: 43 Hours

Minor Requirements	28
AH 303 Livestock Production	5
AY 201 Grain Crops	5
AY 401 Forage Crops	5

B. Basic Building Construction

Minor: 28 Hours

BT 104 Intr. to Buildings	5
BT 105 Drawing and Projections	5
BT 106 Materials and Construction	5
VED 404 Practicum in General Metals	5
VED 405 The School Shop	3
VED 406 Practicum in Building Construction and Maintenance	5

Major: 43 Hours

Minor Requirements	28
BT 220 Mechanics of Structure	5
BT 421 Construction Problems I	5
VED 407 Practicum in Electricity	5

C. Basic Distributive Business

Minor: 26 Hours

EC 101 Intr. to Business	5
EC 331 Principles of Marketing	5
EC 333 Salesmanship	3
EC 433 Retail Store Management	5
HE 306 Personal Appearance and Social Interaction	3
VED 462 Directed Work Experience	5

Major: 44 Hours

Minor Requirements	26
EC 211 Intr. to Accounting	5
EC 341 Business Law	5
EC 432 Advertising	3
EC 438 Retail Merchandising	5

D. Basic Metal Technology

Minor: 29 Hours

EG 102 Engineering Drawing I	2
EG 105 Engineering Drawing II	2
IL 102 Welding Science and Application	1
IL 103 Machine Tool Laboratory	1
IL 104 Sheet Metal Design and Fabrication	1
IL 105 Foundry Technology	1
IL 302 Manufacturing Processes-Machining	3
IL 308 Gages and Measurements	5
IL 406 Problems in Machining	5
VED 404 Practicum in General Metals	5
VED 405 The School Shop	3

Major: 43 Hours

Minor Requirements	29
EG 204 Kinematics of Machines	3
IL 301 Manufacturing Processes-Casting	3
IL 303 Manufacturing Processes-Shaping, Forming, and Fabricating	3
IL 405 Problems in Welding Engineering	5

E. Basic Power Mechanics

Minor: 29 Hours

EG 102 Engineering Drawing I	2
EG 105 Engineering Drawing II	2
EG 204 Kinematics of Machines	3
IL 103 Machine Tool Laboratory	1
IL 308 Gages and Measurements	3
VED 400 Introduction to Power Mechanics	5
VED 401 Practicum in Small Gasoline Engines	5
VED 402 Automotive Construction and Repair	5
VED 405 The School Shop	3

Major: 44 Hours

Minor Requirements	29
EC 101 Introduction to Business	5
IL 406 Problems in Machining	5
VED 404 Practicum in General Metals	5

BUSINESS EDUCATION*A. General Business****Minor: 35 Hours**

EC 211-212 Intr. Accounting	10
EC 200 General Economics	5
EC 300 Business Management	5
EC 341 Business Law	5
SA 111 Business Typewriting I or equivalent	3
SA 200 Office Machines	5

* Non-business education majors may take minor A or B. Business education majors will complete program requirements in A or B.

Major: 66 Hours

Minor Requirements	35
EC 311-312 Intermediate Accounting	10
EC 331 Principles of Marketing	5
EC 404 Administrative Management	5
EH 345 Business and Professional Writing	5
IE 314 Electronic Data Processing Machines	3
SA 305 Records Management	1

B. Office Administration**Minor: 35 Hours**

SA 200-201-202 Secretarial Science or	
SA 201-202-203 Typewriting	9
EC 200 General Economics	5
EC 211-212 Introductory Accounting	10
SA 400 Office Machines	5

Major: 66 Hours

Minor Requirements	35
EC 300 Business Management	5
EC 341 Business Law	5
IE 314 Electronic Data Processing Machines	3
SA 305 Records Management	1
SA 203 Typewriting and/or	
SA 403 Secretarial Procedures I and	
SA 404 Secretarial Procedures II	10
Approved Elective	5

DISTRIBUTIVE EDUCATION**Major: 63 Hours**

EC 202 Prin. and Prob. of Economics	5
EC 331 Principles of Marketing	5
EC 333 Salesmanship	3
EC 432 Advertising	5
EC 433 Retail Store Management	5
EC 434 Purchasing	5
EC 436 Marketing Research Methods	5
EC 435 Marketing Problems	5
EC 438 Retail Merchandising	5
EC 437 Sales Management	5
EC 445 Industrial Relations	5
VED 462 Directed Work Experience	5

DRAMA**Minor: 32 Hours**

DR 104 Intr. Theatre I	3
DR 105 Intr. Theatre II	3
DR 106 Intr. Theatre Projects	3
DR 204 Fund. of Acting I: Voice	5
DR 205 Fund. of Acting II: Movement	5
DR 206 Acting I	5
DR 304 Fund. of Stage Design	5

DR 107 Stage Craft I	1
DR 108 Stage Craft II	1
DR 109 Stage Craft Project	1
DR 201 Theatre Artists in Society I	3
DR 202 Theatre Artists in Society II	3
DR 203 Theories of Acting	3
DR 301 History of Theatre in Western Civilization	3

Major: 57 Hours

Minor Requirements	32
DR 305 Design in the Theatre I	5
DR 306 Design in the Theatre II	5
DR 404 Directing I	5
DR 405 Directing II	5
DR 406 Directing III	5
DR 302 History of Theatre in Western Civilization	3
DR 303 History of Theatre in Western Civilization	3
DR 401 Play Analysis	3
DR 402 World Theatre	3
DR 403 Seminar & Theatre Research	3

ENGLISH**Minor: 20 Hours**

EH 390 Advanced Composition	5
EH 401 Advanced Grammar or	
EH 441 Introduction to the Study of Language	5
Approved Electives 300-400	10
English Courses	10

Major: 40 Hours

Minor Requirements	20
EH 357 or 358 Survey of American Literature	5
EH 451 or 452 Shakespeare	5
Approved Electives 300-400	10
English Courses	10

HEALTH, PHYSICAL EDUCATION, AND RECREATION**Minor: 40 Hours**

Theory & Techniques (Choice of 3 courses)	
HPR 106, 133, 167, 190, 191, 221, 278	6
HPR 201 Introduction to H. & PE	5
HPR 212 Elementary School Activities	3
*HPR 214 Kinesiology	5
HPR 316 Tests and Measurements	3
HPR 317 School Health & Health Educ.	5
HPR 318 Principles of Recreation	5
HPR 401 Administration	5
HPR 202, 206, 303, 304 (Men)	3
HPR 311, 312, 313, 314 (Women)	3
*Pr.-VM 220 and 221, Physics 204	

Major: 55 Hours

Minor Requirements	40
One minor area composed of courses selected from A, B, or C	15

A. Health Education

HE 372 Nutrition & Health	3
HPR 409 Advanced Hygiene	5
HPR 429 Prob. of Health Education and Observation of School Children	5
PY 300 Public Health	5
VM 311 General Bacteriology	5

B. Physical Education

Theory & Techniques (Choice of 2 courses)	
HPR 106, 133, 167, 190, 191, 221, 278	4
HPR 404 Athletic Injuries, First Aid and Safety	5
**HPR 405 Physiology of Muscular Activity	3
HPR 416 Adapted Phys. Educ.	3
HPR 202, 206, 303, 304 (Men)	
HPR 311, 312, 313, 314 (Women)	6

C. Recreation

HPR 301 Recreational Leadership	5
HPR 319 Outdoor Recreation	5
HE 345 Creative Crafts	3
SY 405 Urban Sociology	5

** Required in Option B.

INDUSTRIAL ARTS EDUCATION**Minor: 37 Hours**

EG 102 Engineering Drawing	2
EG 104 Descriptive Geometry	2
IL 101 Woodworking	1
IL 102 Welding Science and Application	1
IL 103 Machine Tool Fabrication	1
IL 104 Sheet Metal Design	1
IL 105 Foundry Technology	1
IL 302 Manufacturing Processes	3
IL 307 General Metals	5
IL 402 Advance Woodworking	5
IL 405 Problems in Welding Engineering	5
IL 416 Material of Industrial Arts	5
VED 404 Approved Elective	5

Major: 59 Hours

Minor Requirements	37
EG 105 Engineering Drawing II	2
IL 308 Gages and Measurements	5
IL 418 Industrial Arts Design	5
IL 438 Safety Engineering	5
VED 407 Pract. in Electricity	5

MATHEMATICS***Minor: 35 Hours**

MH 160 Algebra and Trigonometry	5
MH 161 Analytic Geom. & Calculus I	5
MH 162 Analytic Geom. & Calculus II	5
MH 163 Analytic Geom. & Calculus III	5
MH 264 Analytic Geom. & Calculus IV	5
MH 331 Higher Algebra	5
MH 447 Foundations of Plane Geom. or	
MH 481 College Geometry	5

Major: 55 Hours

Minor Requirements	35
MH 340 Topology or	
MH 420 Introduction to Analysis	5
MH 367 Mathematical Statistics	5
MH 431 Introduction to Modern Algebra	5
Approved Elective	5

* No credit allowed in MH 281 or 107 in major or minor.

MODERN LANGUAGES**A. Spanish****Minor: 30 Hours**

FL 141 Elementary Spanish	5
FL 132 Elementary Spanish	5
FL 231 Intermediate Spanish	5

FL 232 Intermediate Spanish	5
FL 331 Advanced Spanish	5
FL 332 Advanced Spanish	5

Major: 40 Hours

Minor Requirements	30
FL 431 History of Spanish Literature	5
FL 432 History of Spanish Languages	5

B. German**Minor: 30 Hours**

FL 151 Elementary German	5
FL 152 Elementary German	5
FL 251 Intermediate German	5
FL 252 Intermediate German	5
FL 351 Advanced German	5
FL 352 Advanced German	5

Major: 40 Hours

Minor Requirements	30
FL 451 History of German Literature	5
FL 452 History of German Language	5

C. French**Minor: 30 Hours**

FL 121 Elementary French	5
FL 122 Elementary French	5
FL 221 Intermediate French	5
FL 222 Intermediate French	5
FL 321 Advanced French	5
FL 322 Advanced French	5

Major: 40 Hours

Minor Requirements	30
FL 421 History of French Literature	5
FL 422 History of French Language	5

MUSIC**Minor: 30 Hours**

MU 131, 132, 133 Material and Organization of Music	15
Applied (one area; if piano, organ will be secondary area)	6
MU 352, 353 Music History II & III	6
MU 361 Conducting I	3
SED 494 Organization of Instrumental Music 3	
Piano (Private applied or class, to be assigned by staff committee)	3

Major: 60 Hours

Minor Requirements	30
Band, Orchestra, Choir or Mixed Chorus	11
MU 231, 232, 233 Music Theory	9
Applied, Major Area	5
MU 351 Music History I	3
MU 362, 363 Conducting II & III	2

Composite Major-Minor: 90 Hours

Major Requirements	60
Completion of A or B	30

A. Instrumental and Choral

MU 431, 432 Musical Analysis	6
Electives (Woodwind, brass, string, vocal ensemble)	4
MU 113, 114, 115 Brass Instruments Class	3
MU 116, 117, 118 Woodwind Instruments Class	3
MU 477 Music Arranging	3
MU 409 Marching Band Techniques	3

MU 454 Instrumental Literature	3
SED 495 Organization of Choral Music	3
MU 110 String Instruments Class	1
MU 119 Percussion Instruments Class	1

B. Choral and Elementary School Music

MU 431, 432 Music Analysis	6
Music Electives	3
EED 497 Organization of Elementary Music	3
MU 334 Counterpoint I	3
MU 434 Composition	3
Applied Piano	3
MU 452 Vocal Literature	3
MU 453 Choral Literature	3

REHABILITATION SERVICES EDUCATION**Major: 65 Hours**

VED 476 Organization of Instruction in Trade and Industrial Education	5
VED 330 Careers in Rehabilitation	5
VED 435 Vocational Evaluation in Rehabilitation	5
VM 210 Human Physiology	5
VM 220 Human Anatomy and Physiology	5
IE 201 Industrial Engineering	5
SP 273 Group Problem-Solving Through Discussion	5
IED 476 Exceptional Child	5
Approved Electives in Area of Specialization	25

SCHOOL LIBRARY SCIENCE**Minor: 28-30 Hours**

IED 472 Books and Related Materials for Children	4
IED 482 Organization and Administration of School Libraries	5
IED 484 Class, & Cataloging of School Library Materials	5
IED 486 Books and Related Materials for Young People	5
IED 487 Practicum in School Library Services	4-6
VED 485 Audio-Visual Materials	5

SCIENCE***Minor: 20 Hours**

Approved courses in science	20
* Students who select science as a minor and who major in another area must complete CH 103, 103L and 104, 104L and PS 204 as a part of the minor.	

Major: 40 or 45 Hours

Minor Requirements	20
Completion of one area composed of courses selected from A, B, or C	20-25

A. General Science

PS 205-206 General Physics	10
SED 473 General Science for Teachers	5

Elective

B. Biological Science

ZY 214 Vertebrate Physiology & Anatomy	5
Approved Electives in Biological Science 300 and 400 courses	20

C. Physical Science

PS 205-6 General Physics	10
CH 206 Quantitative Analysis	5
CH 207 Organic Chemistry	5

Approved Elective

SOCIAL SCIENCE**A. General Social Science*****Minor: 20 Hours**

HY 207-8 World History	10
PO 206 U.S. Government	5

Approved Electives from 300-400 courses in History, Sociology, Geography, or Economics

Major: 40 Hours

Minor Requirements	20
HY 406 Recent U.S. History	5

HY 452 History of Latin America or HY 451 The Far East	5
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Approved Electives from 300-400 courses

B. Composite Major-Minor: 65 Hours

Major Requirements in 1, 2, 3, or 4

Minor Requirements, exclusive of major area selected from 1, 2, 3, or 4

* No other minor is available to non-social science majors.

1. Economics**Minor: 25 Hours**

EC 200-202 General Economics/Economics II	10
EC 451 Intermediate Economic Theory	5

EC 452 Comparative Economic Systems	5
Approved Electives	5

Major: 40 Hours

Minor Requirements

Fifteen hours selected from

EC 211 Introductory Accounting	5
EC 350 Labor Problems	5

EC 357 Economic History of Europe or EC 358 Economic History of the United States	5
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EC 360 Money and Banking	5
EC 402 American Industries	5

EC 445 Industrial Relations	5
EC 465 Public Finance	5

2. Geography**Minor: 25 Hours**

GY 102 Principles of Geography	5
GY 103 Economic Geography	5

GY 405 Cultural Geography of the World	5
Approved Electives	10

Major: 40 Hours

Minor Requirements

Fifteen hours selected from

GY 303 Geography of the Soviet Union	5
GY 304 Geography of South America	5

GY 305 Geography of North America	5
GY 306 Geography of Europe	5

GY 307 Geography of Asia	5
GY 308 Geography of Africa	5

3. Sociology**Minor: 25 Hours**

SY 201 Introduction to Sociology	5
SY 203 Cultural Anthropology	5

Approved Electives	15
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Major: 40 Hours

Minor Requirements

SY 202 Social Problems	5
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SY 304 Minority Groups	5	9 hours approved electives from following:
SY 308 Juvenile Delinquency	5	HPR 429 Problems of Health Education & Health Observation of School Children
4. History		5
Minor: 25 Hours		HPR 416 Adaptive Physical Education
HY 207-8 World History	10	SP 451 Principles of Speech Correction
HY 107 United States History	5	EED 370 Tchg. El. Sch. Math.
Approved Electives	10	SED 201 (O or P) Exceptional Children or Communication Problems
Major: 40 Hours		2
Minor Requirements	25	Major: 40 or 50 Hours**
Fifteen hours selected from		Minor Requirements
PO 206 American Government	5	32
HY 313 Recent European History	5	A. Select two courses from following (minimum of 8 hours)
HY 451 The Far East	5	AT 342 Elementary School Art
HY 452 History of Latin America	5	IL 415 Shopwork for Elementary Teachers ..
SPEECH AND/OR SPECIAL EDUCATION*		IED 472 Books and Related Materials
A. Speech		for Children
Minor: 32 Hours		MU 371 Introduction to Music
SP 201 Intr. to Oral Comm.	5	HE 345 Creative Crafts
SP 211 Essentials of Public Speaking	5	B. Select 10 hours from following:
SP 200 Survey of the Bases of Speech	5	EED 371 Tchg. Rdg. & Other Lang. Arts ..
SP 273 Group Discussion	5	SP 460 Introduction to Problems in Hearing
SED 201 (P) Communication Problems	2	SP 452 Advanced Speech Correction
Minors select 10 hours from the following approved electives	10	or Approved Electives
Major: 40 or 50 Hours**		
Minor Requirements	32	TRADE AND INDUSTRIAL EDUCATION
Majors select 8-18** hours from the following approved electives.		Major: 45 Hours
SP 220 Interpretative Reading	5	VED 475 Trade and Technical Experience ..
SP 311 Advanced Public Speaking	5	VED 476 Trade and Technical Experience ..
SP 230 Fundamentals of Radio and Television Broadcasting	5	VED 477 Trade and Technical Experience ..
SP 451 Principles of Speech Correction	5	VED 478 Trade and Technical Experience ..
SP 411 Persuasive Speaking	5	VED 479 Trade and Technical Experience ..
Approved Elective	3	VED 480 Trade and Technical Experience ..
B. Speech Correction***		EC 350 Labor Problems
Minor: 32 Hours		EC 444 Labor Legislation
SP 201 Intr. to Oral Comm.	5	IE 438 Safety Engineering
SP 211 Essentials of Public Speaking	5	
SP 301 Phonetics	5	VOCATIONAL HOME ECONOMICS
SP 300 The Speech Mechanism	5	Major: 63 Hours
SP 460 Introduction to Problems in Hearing	5	HE 207 (3)-407 (5) Child Development
SP 451 Principles of Speech Correction	5	HE 102 Basic Foods and Nutrition
SED 201 (P) Communication Problems	2	HE 105 Fundamentals of Clothing
Major: 40 or 50 Hours**		HE 202 Meal Management
Minor Requirements	32	HE 205 Clothing for the Family
Majors select 8-18** hours from the following approved electives		HE 303 The House I or
IED 476 The Exceptional Child	5	HE 343 Interior Home Problems
PE 409 Advanced Hygiene or		HE 233 Home Equipment or
FED 434 Mental Hygiene	5	HE 313 Home Furnishings
SP 452 Advanced Speech Correction	5	HE 323 Home Management
Approved Elective	3	HE 443 Home Management Residence
C. Mental Retardation		HE 457 Family Relationships
Minor: 32 Hours		HE 305 Tailoring or
EED 371 Tchg. Rdg. and Other Lang. Arts ..	6	HE 355 Consumer Textiles
IED 476 The Exceptional Child	5	HE 353 Community and Family Health
IED 478 Nature of Mental Retardation	5	HE 372 Nutrition and Health
FED 434 Personality Dynamics and Effective Behavior	5	Approved electives in Home Economics

* Includes provisions for students to develop major and/or minor areas of concentration in speech, speech correction, or mental retardation.

** Requirement of 50 hours for concentration in one area only—when program of study includes two or more areas of concentration a minimum of 40 hours must be completed in one area.

*** Additional work required: 200 clock hours in an approved Speech and Hearing Clinic.

IV. Guides for the Completion of Curricular Requirements for the Respective Preparation Programs in Teacher Education

The following curricular outlines set forth requirements and suggestions for preparing teachers to teach in the elementary school, the respective fields of the secondary school, and elementary-secondary in art; dramatic arts; health, physical education and recreation; industrial arts; music; speech and/or special education, including speech correction and mental retardation; and school library science. Provisions are made for meeting the requirements in the pre-professional program, the program in professional education, academic majors and minors, and electives. Specified also are the total number of hours required for the completion of each curriculum and the number of hours assigned to each quarter. In general, courses listed should be taken in sequence.

The Dean reserves the privilege of making substitutions in course requirements, provided such modifications do not conflict with state requirements or university regulations as to degrees in Education.

A. Elementary Education (EED)

FRESHMAN YEAR

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
EH 101 English Comp. ....5	EH 102 English Comp. ....5	Biological Science ..5
HY 107 United States Hist. 5	GY 102 Prins. of Geog. ....5	FED 213 Growth & Dev. of School-Age Child. ....5
PE 110 Hygiene .....3	Biological Science ..5	EED 102 Orientation .....1
EED 102 Orientation .....1	EED 103 Orientation .....1	PE Physical Education ..1
PE Physical Education ..1	PE Physical Education ..1	*Approved Elective ..5
*Approved Elective ..2	*Approved Elective ..1	

SOPHOMORE YEAR

EH 253 Lit. in English .....5	EH 254 Lit. in English .....5	FED 200 Foundations of Ed. 4
MH 281 El. Mathematics ....5	HY 207 World History .....5	HY 208 World History .....5
FED 214 Educ. Psychology 5	MH 282 El. Mathematics ....5	SY 201 Intr. to Sociology ..5
PE Physical Education ..1	MU 371 Intr. to Music .....3	PE Physical Education ..1
*Approved Elective ..2	PE Physical Education ..1	*Approved Elective ..3
	*Approved Elective ..1	

JUNIOR YEAR

AT 342 Elem. School Art ...5	EED 329 Creative & Rec. ..6	EED 371 Teh. Rdg. & Other Lang. Arts .....6
PO 206 U.S. Gov't. .....5	EED 370 Tch. El. Sch. Math. ....4	SP 451 Prins. of Speech Correction .....5
FED 300 Prins. & Practices in Education .....4	Physical Science ..5	Physical Science ..5
Approved Elective ..4	Approved Elective ..3	Approved Elective ..4

SENIOR YEAR

EED 421 Dev. Understand. of the Natural & Social Environment 6	EED 425 Student Teaching 15	FED 490 Evaluation in Education .....3
HY 381 Hist. of Alabama ...5		Approved Electives 15
English Elective ....3		
Approved Elective ..4		

* Male students will schedule Military Training each quarter in the freshman and sophomore years.

Students will carefully plan the use of electives in order to develop an area of concentration in a related content area, or in one of the following twelve-grade programs: art; dramatic arts; health, physical education and recreation; industrial arts; music; speech and/or special education, including speech correction and mental retardation; and school library science.

Total—215 quarter hours

*B. Secondary Education (SED)

FRESHMAN YEAR		
FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
EH 101 English Comp. ....5 HY 101 History of the United States, or HY 107 United States Hist., or GY 102 Principles of Geog. 5 SED 102 Orientation: Personal & Prof. ....1 Major or Minor .....5 PE 111 Hygiene (women), or MS Military Training (men) .....1 PE Physical Education ..1	EH 102 English Comp. ....5 HY 102 History of the United States, or GY 102 Prins. of Geog. ....5 Major or Minor .....5 SED 103 Orientation: Personal & Prof. ....1 PE 112 Hygiene (women), or MS Military Training (men) .....1 PE Physical Education ..1	FED 213 Growth & Dev. of School-Age Child. ..5 BY 101 General Botany, or ZY 101 General Zoology, or (approved biological science) ..5 Major or Minor .....5 SED 104 Orientation: Personal & Prof. ....1 PE 113 Hygiene (women), or MS Military Training (men) .....1 PE Physical Education ..1
SOPHOMORE YEAR		
BY 102 General Botany, or ZY 102 General Zoology, (or approved biological science) .....5 Major or Minor .....5 FED 214 Educational Psyc. 5 MS Military Training (men) or Elective (women) ....1 PE Physical Education ..1	MH 281 Fundamentals of Math. I (or approved math. elective) ....5 FED 200 Foundations .....4 Major, Minor or approved electives ..7 MS Military Training (men), or Elective (women) ..1 PE Physical Education ..1	EC 200 Gen. Economics, or HY 207 World History, or SY 201 Intr. to Sociology ..5 EH 253 English Literature ..5 Major or Minor .....5 MS Military Training (men) or Elective (women) ....1 PE Physical Education ..1
JUNIOR YEAR		
EH 254 English Literature (or approved substitute) .....5 FED 300 Prins. & Practices in Education .....4 Major-Minor (or approved electives) ..6 Teaching, Program (Major-Minor) (or approved elective) ..5 Major-Minor, (or approved electives) 15 Teaching, Program (Major-Minor) (or approved elective) ..3	EC 200 Gen. Economics, or HY 208 World History, or SY 201 Intr. to Sociology ..5 Major-Minor (or approved electives) 10 Teaching, Program (Major-Minor) (or approved elective) ..3	PS 204 Survey Course in Physics, (or approved physical science) ....5 Major-Minor (or approved electives) 10 Teaching, Program (Major-Minor) (or approved elective) ..3
SENIOR YEAR		
	Student Teaching ..15	SED 473 Gen. Science for Teachers (or approved physical science) .....5 FED 490 Evaluation in Education .....3 Major-Minor (or approved electives) 12

* The above curriculum is the framework for a complete program in secondary education. The department offers a complete program in a number of teaching fields. These include the major and minor in art, business education, dramatic art, English, vocational home economics, languages, mathematics, music, science, social science, speech, and the minor in school library science.

Total—215 quarter hours

C. Health, Physical Education and Recreation (HPR)

FRESHMAN YEAR		
FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
EH 101 English Comp. ....5 GY 102 Prin. of Geography 5 HY 107 or 101 U.S. History 5 MS Military Training ....1 HPR 102 Orientation .....1 PE Physical Education ..1	EH 102 English Comp. ....5 HPR 200 Intr. to Phys. Ed. 5 VM 220 Anatomy & Physiology .....5 MS Military Training ....1 HPR 103 Orientation .....1 PE Physical Education ..1	FED 213 Growth & Development .....5 VM 221 Anatomy & Physiology .....5 HPR 110 Health Science ....3 HPR 212 Elementary School Activities .....3 MS Military Training ....1 HPR 104 Orientation .....1 PE Physical Education ..1

SOPHOMORE YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
EH 253 English Lit. ....	.5	EC 200 General Economics ..	.5	HPR 214 Kinesiology .....	.5
MH 281 Fundamentals of Math. ....	.5	PS 204 Physics .....	.5	SY 201 Sociology .....	.5
FED 214 Educational Psych. .5		SP 211 Speech .....	.5	FED 200 Found. of Ed. ....	.4
HPR Theory & Technique 2		HPR Theory & Technique 2		HPR Theory & Technique 2	
MS Military Training ..1		MS Military Training ..1		MS Military Training ..1	
PE Physical Education ..1		PE Physical Education ..1		PE Physical Education ..1	
JUNIOR YEAR					
HPR 318 Prin. of Recreac. ....5		HPR 316 Tests & Measurements .....	.3	HPR 317 School Health & Health Educ. ....5	
HPR Option A, B, or C ..5		HPR 202, 206, 303, 304 (M) or		SED 473 Gen. Sci. for Teachers or	
FED 300 Princ. & Pract. Ed. 4		HPR 311, 312, 331, 314 (W) 3		Approved Elective ..5	
HPR Theory & Technique 2		HPR 414 Teaching (Major) ..3		HPR 423 Program (Major) ..3	
		HPR Theory & Technique 2		Approved Elective ..6	
SENIOR YEAR					
HPR Option A, B, or C ..5		HPR Option A, B, or C ..5		HPR 425 Student Teaching 15	
PS 401 Organization & Administration ..5		FED 490 Evaluation ..3			
HPR 414 or 423 Teaching or Program (minor) ..3		HPR 414 or 423 Program or Teaching (minor) or			
Approved Elective ..5		Approved Elective ..3			
		Approved Elective ..9			

Total—215 quarter hours

D. Vocational, Technical and Practical Arts (VED)

FRESHMAN YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
HY 107 U.S. History .....	.5	EH 101 English Comp. ....	.5	BY 101 General Botany** ..	.5
MH 121 University Math. ....5		MH 122 University Math.*** 5		EH 102 English Comp. ....5	
ZY 101 General Zoology** 5		CH 103 General Chemistry ..4		CH 104 General Chemistry ..4	
VED 102 Orientation ..1		CH 103L Gen. Chem. Lab. ..1		CH 104L Gen. Chem. Lab. ..1	
MS Military Training ..1		VED 103 Orientation ..1		VED 104 Orientation ..1	
PE Physical Education ..1		MS Military Training ..1		MS Military Training ..1	
		PE Physical Education ..1		PE Physical Education ..1	

* MH 107, College Algebra, for Agricultural Education and Basic Distributive Business.

** Approved physical science elective for Basic Building Construction and Basic Metals Technology majors and MH 108 for Basic Distributive Business majors. ZY 102 for Rehabilitation Service majors.

*** Approved horticultural elective for Agricultural Education majors.

SOPHOMORE YEAR

General Economics		FED 214 Ed. Psychology ....5		PS 206 Intr. Physics** .....	.5
Elective* .....	.5	PS 204 Foundations of Physics .....	.5	SP 211 Essentials of Public Speaking .....	.5
FED 213 Growth & Dev. of the School-Age Child .....	.5	FED 200 Foundations of Ed. 4 Writing Elective ..3		FED 300 Prin. & Pract. of Ed. ....4	
Social Science		MS Military Training ..1		VED 346 Voc. & Pract. Arts Ed. ....3	
Elective*** .....	.5	PE Physical Education ..1		MS Military Training ..1	
MS Military Training ..1				PE Physical Education ..1	
PE Physical Education ..1					

* AS 202 for Agricultural Education and EC 201 for Distributive Education majors.

** PS 205 for Basic Building Construction, Basic Metals Technology, Basic Power Mechanics, Industrial Arts and Trade and Industrial Education majors. VED 330 for Rehabilitation Service majors.

*** SY 201 and SY 305 replace social science electives and PG 211-PG 212 in lieu of FED 213 and FED 214 for Rehabilitation Service majors.

1. Agricultural Education**JUNIOR YEAR****FIRST QUARTER**

AH 204	Animal Nutrition	5
AN 303	Farm Machinery & Equipment	
or		
AN 301	Drainage & Terracing	5
VED 246	Inst. Drawing	3
VED 410	Occupational Information	3
	Elective	2

SECOND QUARTER

AH 303	Livestock Production	5
DH 200	Dairy Fundamentals or	
FY 313	Farm Forestry or	
PH 301	General Poultry	5
VED 404	Pract. in General Metals	5
VED 414	Program & Teaching	5

THIRD QUARTER

AS 401	Farm Management	5
AY 307	General Soils	5
VED 406	Pract. in Building Construction & Maintenance	5
VED 456	Learning Resources	3

SENIOR YEAR

VED 425 Student Teaching 15

AS 301	Agr. Marketing	5
AY 201	Grain Crops	
or		
AY 401	Forage Crops	5
ZY 402	Economic Entomology	5
FED 490	Eval. in Education	3

Total—220 quarter hours

2. Basic Vocational Education**JUNIOR YEAR****FIRST QUARTER**

Major Electives*	10
VED 410	Occupational Information
Major Elective	5

SECOND QUARTER

Major Elective	5
VED 414	Program & Teaching Major
Minor Electives	8

THIRD QUARTER

Major Electives	10
VED 456	Learning Resources
Minor Electives	8

SENIOR YEAR

Major Electives*	15
VED 423	Program in Basic
VED (Minor)*	3

Major Electives	5
Minor Electives	10
FED 490	Eval. in Ed.

Note: See page 114 for the listing of approved major and minor electives in the basic vocational specialization fields of agriculture, building construction, distributive business, metals technology and power mechanics.

Total—220 quarter hours

3. Distributive Education**JUNIOR YEAR****FIRST QUARTER**

EC 331	Prin. of Marketing	5
EC 333	Salesmanship	3
VED 410	Occupational Info.	3
TE 101	Intr. to Textiles	1

SECOND QUARTER

EC 432	Advertising	5
EC 433	Retail Store Management	5
VED 414	Program and Teaching	5
	Elective	3

THIRD QUARTER

EC 434	Purchasing	5
EC 436	Marketing Research Methods	5
VED 456	Learning Resources	3

SENIOR YEAR

EC 435	Marketing Problems	5
EC 438	Retail Merchandising	5
	Elective	4
VED 458	Coord. & Supervision in VED	3
VED 466	Teaching Out-of-School Group	3

EC 437	Sales Management	5
EC 445	Industrial Relations	5
VED 462	Directed Work Experience	5
FED 490	Evaluation in Education	3

Total—220 quarter hours

4. Industrial Arts Education

JUNIOR YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
IM 307 Safety Engineering	5	IL 308 Gages & Measurements	5	Elect. & Teaching Minor	7
VED 404 Pract. in Gen. Metals	5	VED 414 Program and Teaching	5	IL 307 Gen. Metals	5
VED 410 Occupational Information	3	IL 302 Manufacturing Processes	3	VED 456 Learning Resources	3
EG 102 Eng. Drawing I	2	VED 405 The School Shop	3	EG 104 Descriptive Geometry	2
IL 102 Welding Science	1	EG 105 Eng. Drawing II	2	IL 104 Sheet Metal Design and Fabrication	1
IL 103 Machine Tools	1	Approved Elective	2	IL 105 Foundry Tech.	1
SENIOR YEAR					
IL 416 Material of Ind. Arts	5	VED 425 Student Teaching 15		IL 402 Advanced Woodworking	5
IL 418 Industrial Design	5			IL 405 Probs. in Welding Eng.	5
VED 407 Pract. in Elect. Program Minor	3			VED 409 Electronics in Ind. Arts for Teachers	5
IL 101 Woodworking	1			FED 490 Eval. in Education 3	

Total—220 quarter hours

5. Trade and Industrial Education

JUNIOR YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
EC 350 Labor Problems	5	EC 444 Labor Legislation	5	VED 477 Trade & Tech. Exp.*	5
VED 458 Audio Visual Materials	5	VED 414 Program & Teaching	5	VED 476 Org. of Inst. in Trade & Ind. Ed.	5
VED 475 Trade & Tech. Exp.*	5	VED 476 Trade & Tech. Exp.*	5	VED 458 Learning Resources	3
VED 410 Occupational Information	3	VED 405 The School Shop	3	Elective	4
SENIOR YEAR					
IL 417 Org. of Shop Courses	5	VED 479 Trade & Tech. Exp.*	5	IE 438 Safety Eng.	5
VED 478 Trade & Tech. Exp.*	5	VED 425 Student Teaching 15		VED 480 Trade & Tech. Exp.*	5
VED 458 Coord. & Supr. in VED	3			FED 490 Eval. in Education 3	
VED 466 Teaching Out-of-School Groups	3			Elective	4
Elective	2				

Total—224 quarter hours

6. Rehabilitation Services Education

JUNIOR YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
VM 210 Human Physiology	5	VM 220 Human Anatomy and Physiology	5	SY 406 Intr. to Social Welfare	5
VED 410 Occupational Information	3	VED 476 Org. of Inst. in Trade & Ind. Ed.	5	SP 273 Group Problem-Solving Through Discussion	5
IE 201 Industrial Engineering	5	VED 405 The School Shop	3	Select Elec.	8
Select Elec.	5	Select Elec.	7		
SENIOR YEAR					
*VED 435 Voc. Eval. in Rehabilitation	5	*VED 436 Student Internship	15	VED 485 Audio-Visual Materials	5
IED 476 The Exceptional Child	5			Select Elec.	10
Select Elec.	9			Elec. in Psychology	5

Total—221 quarter hours

* Credit for VED 475-480 (inc.) (5-5-5-5-5) by supervised employment or by examination on basis of journeyman level work experience at the maximum rate of 15 quarter hours for each year of such experience. In those occupations where there is no organized apprenticeship experience beyond the level of learner, the level of learner will correspond to journeyman level. If employment experience required for certification is obtained prior to starting the curriculum, elective coursework may be substituted for these credits. Time required to complete curriculum would be reduced accordingly.

School of Engineering

FRED H. PUMPHREY, *Dean*
J. GRADY COX, *Associate Dean*

The Profession

THE ENGINEERING PROFESSION applies a knowledge of the mathematical and natural sciences in developing ways to utilize the materials and forces of nature for the benefit of mankind. The various curricula in engineering prepare the students to work and serve in this profession. It is largely through the efforts of the engineer that it is now possible for our American civilization to consider the elimination of want.

Liberal Education

As a professional man the engineer must have a broad general education so that he may take his place not only in the technical councils of American citizenry, but in social and political councils as well. It is essential, therefore, that he have a truly liberal education.

Admission Requirements

As indicated above, the requirements for a good liberal education necessitate high school preparatory work of high intellectual quality and of considerable breadth. For admission to the curriculum in Pre-Engineering graduation from an approved secondary school with a minimum of 15 units, or the equivalent as shown by examination, is required. The following program is recommended as *minimum* preparation for a college engineering education: English, four units; mathematics (including algebra, geometry and trigonometry); chemistry, physics, biology, two or three units; foreign language, two or three units; history, literature, social science, two or three units.

The ability to communicate with his fellow man is absolutely essential to the engineer. The secondary school student needs four years of English in order to gain the ability to read, write, speak and listen with precision, facility, clarity and understanding.

Preparation for world-wide communication and travel, now possible because of great engineering achievement, calls for study by engineers of foreign languages. Study should begin as early as possible, even in elementary or junior high school, and should include a minimum of two years in at least one foreign language in secondary school.

Mathematics and the sciences are the fundamentals upon which the profession of engineering is built. The prospective engineering student must acquire the best possible background of mathematics in elementary, junior high and senior high school. The college preparatory mathematics should include two and one-half units of algebra, one unit of geometry including geometry of three dimensions, and one-half unit of trigonometry or the equivalent in a coordinated four-year modern college preparatory mathematics program. These mathematics courses definitely should be deep and rigorous and preferably of modern design. The student will need at least one year of physics and one year of chemistry. Biology is advantageous but should not be selected in preference

to physics or chemistry. The courses in science should stress concepts and methods of science and should not be courses in the wonders of science.

Applicants are admitted to curricula in the School of Engineering by the Engineering Admissions Committee after satisfactory performance in the appropriate freshman program. Applicants for admission to Aerospace, Civil, Electrical, Industrial, Mechanical, Metallurgical, and Textile Engineering and Textile Chemistry will be approved upon completion with satisfactory grades of prescribed courses in mathematics through MH 162; English Composition, 10 hours; chemistry, 10 hours; and engineering graphics including descriptive geometry, 6 hours. Admission to Aviation Management will be approved upon satisfactory completion of 50 quarter hours and to Textile Management upon satisfactory completion of 45 quarter hours of the work prescribed for the freshman year, provided the completions include all the prescribed work in English composition, chemistry, and engineering graphics.

Engineering Curricula.—Curricula offered are designed to meet the educational requirements of the engineering profession. The program in the fundamental sciences of mathematics, chemistry, and physics is followed by a study of basic engineering sciences. Specialized or departmental courses follow in the third and fourth years. A parallel program emphasizing the humanistic-social studies, including history, literature, economics, philosophy and similar courses, is followed throughout the four years having as its objective a good general education for the engineering student.

Curricula accredited by the Engineers' Council for Professional Development lead to the degrees of Bachelor of Aerospace Engineering, Bachelor of Civil Engineering, Bachelor of Electrical Engineering, Bachelor of Industrial Engineering, and Bachelor of Mechanical Engineering. Accredited curricula in Agricultural Engineering and Chemical Engineering are offered by the Schools of Agriculture and Chemistry, respectively.

A curriculum in Metallurgical Engineering leads to the degree of Bachelor of Metallurgical Engineering. This curriculum is administered through the Department of Mechanical Engineering.

A curriculum in Textile Engineering leads to the degree of Bachelor of Textile Engineering. A curriculum in Textile Chemistry leads to the degree of Bachelor of Textile Chemistry. This latter curriculum is designed to train students in the chemistry of man-made fibers and in the theory and practice of textile dyeing and finishing.

Engineering students who wish to lighten the load of a four-year curriculum may schedule 15 or 16 hours per quarter rather than the prescribed 18 to 20 hours. It is recommended that students not well-grounded in English, mathematics or science plan their programs on the basis of the lighter load. This will require one or more additional quarters of residence.

Management Curricula.—Two management curricula leading to the degrees of Bachelor of Aviation Management and Bachelor of Textile Management prepare young men and women for a wide range of administrative and managerial positions in industry. The program of study in the freshman year provides a period of orientation, guidance, and selection. Freshmen are registered in the Department of Pre-Engineering as Pre-Engineering-Management students, and are admitted to management curricula upon successful completion of the freshman program.

Graduate Degrees.—Master of Science degrees are offered in the areas of Aerospace Engineering, Civil Engineering, Electrical Engineering, Industrial Engineering, and Mechanical Engineering. The Doctor of Philosophy degree is offered in the areas of Electrical Engineering and Mechanical Engineering. For requirements for these degrees, see the Graduate School Bulletin.

Service Departments.—The Departments of Engineering Graphics and Industrial Laboratories are service departments to the School of Engineering. However, the courses offered in these departments may also be taken by students in other schools who may find them useful in their particular fields. The Department of Industrial Laboratories, in cooperation with the School of Education, offers a program for the professional and technical training of Industrial Arts teachers for elementary and secondary schools. (See School of Education for major and minor requirements.)

Co-Operative Education Program

The Co-operative Education Program is offered in all curricula of the School of Engineering. Refer to page 43 for a brief description of the program and write to the Director, Co-operative Education, 107 Ramsay Hall, for a booklet which gives additional information.

Engineering Extension Service

The Engineering Extension Service helps to extend the resources of the School of Engineering to the people, businesses, and industries of the state. Most of the programs of this expanding service take the form of short courses, conferences, clinics, and seminars. For further information write to the Director, Engineering Extension Service, 107 Ramsay Hall.

Auburn School of Aviation

ROBERT G. PITTS, *Director*

The Auburn School of Aviation was established in 1942 as a department of the School of Engineering to offer flight and ground school instruction in aircraft piloting for resident and extension students of the University, for the Armed Forces, and for the general public; and to serve the citizens of Alabama and the Southern Region by providing other services in the broad field of aviation. The School cooperates fully with the Federal Aviation Agency in conducting special aviation training programs. At the present time the school is conducting a flight program for the training of private, commercial, multi-engine, and instrument pilots and flight instructors.

The University is exceptionally well equipped to conduct pilot training programs inasmuch as it owns a large modern airport of 325 acres conveniently located within two miles of the campus. The landing field has two paved runways 4,000 feet long. Other facilities include two large hangars and a modern Administration Building.

In addition to the training of pilots, such other public service accommodations as airplane storage, servicing, maintenance, and repair are provided at the airport. In conjunction with the Aerospace Engineering Laboratories located on the campus, the operation at the airport serves as an excellent laboratory of practical training for students enrolled in the curricula of Avia-

tion Management and Aerospace Engineering. Because of the excellent aviation facilities, the University has been fully certified by the Federal Aviation Authority as an Approved Ground and Flight School and has examining authority for private pilots.

The Director of the Auburn School of Aviation is an Aircraft Inspection Representative for the Federal Aviation Agency.

Pre-Engineering

HOWARD STRONG, Assistant to the Dean for Pre-Engineering

The Pre-Engineering Program consists of a freshman program of studies to prepare students for admission to the School of Engineering with sophomore standing.

The freshman Pre-Engineering curriculum shown below is uniform for seven Engineering curricula: namely, Aerospace, Civil, Electrical, Industrial, Mechanical, Metallurgical, and Textile Engineering. It is designed for students whose ACT or College Board (SAT) scores indicate that they are capable of being successful in Mathematics 161, English 101 or 103, and Chemistry 103 during their first quarter in school. *Students required to schedule courses below these levels in mathematics, English, and/or chemistry, are expected to plan, with the assistance of the Assistant to the Dean for Pre-Engineering, a program of work for four or five quarters, depending upon their aptitude and extent of high school preparation.* A typical five-quarter curriculum follows the three-quarter curriculum outlined below.

A student who has not proceeded from Pre-Engineering to his field of major interest in engineering after the completion of six quarters may continue to register in Pre-Engineering only by special permission of the Dean of Engineering.

Three-Quarter Pre-Engineering Curriculum

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
CH 103 Gen. Chemistry .....4	CH 104 Gen. Chemistry .....4	MH 163 Anal. Geom. & Cal. 5
CH 103L Gen. Chem. Lab. ..1	CH 104L Gen. Chem. Lab. ..1	PS 201 Gen. Phys. I .....5
EH 101 English Comp. .....5	EH 102 English Comp. .....5	EG 105 Engr. Draw. II .....2
MH 161 Anal. Geom. & Cal. 5	MH 162 Anal. Geom. & Cal. 5	IL 102 Welding Science .....1
EG 102 Engr. Draw. I .....2	EG 104 Descript. Geom. .....2	IL 103 Machine Tool Lab. ..1
PN 101 History of Engr. ....1	PN 102 Intr. to Engr.	PN 103 Engr. Method .....1
MS Military Training .....1	Profession .....1	*Elective .....3
PE Physical Education ..1	MS Military Training ..1	MS Military Training ..1
	DE Planning Education ..1	PE Physical Education ..1

* See approved list, page 128.

Five-Quarter Pre-Engineering Curriculum*

FIRST QUARTER		SECOND QUARTER	
CH 103 General Chemistry	4	CH 104 General Chemistry	4
CH 103L General Chemistry Lab.	1	CH 104L General Chemistry Lab.	1
EH 101 English Composition	5	EH 102 English Composition	5
MH 160 Intr. to College Math,		MH 161 Anal. Geom. & Calculus	
OR		OR	
MH 161 Anal. Geom. & Calculus	5	MH 162 Anal. Geom. & Calculus	5
IL 103 Machine Tool Laboratory	1	IL 102 Welding Science	1
PN 101 History of Engineering	1	PN 102 Intr. to Engr. Profession	1
MS Military Training	1	MS Military Training	1
PE Physical Education	1	PE Physical Education	1

* This curriculum includes all the Pre-Engineering courses plus 28 quarter hours of sophomore work (EC 206; MH 254 and 361; PS 202 and 203; and PA 202 or EH 108 or EH 253.)

THIRD QUARTER

MH 162	Anal. Geom. & Calculus
or	
MH 163	Anal. Geom. & Calculus
PS 201	Gen. Physics I
EC 206	Socio-Economic Foundations of Contemporary America
EG 102	Engineering Drawing I
PN 103	Engineering Method
MS	Military Training
PE	Physical Education

FOURTH QUARTER

HY 107	United States History
or	
MH 263	Anal. Geom. & Calculus
MH 264	Anal. Geom. & Calculus
PS 202	Gen. Physics II
EG 104	Descriptive Geometry
MS	Military Training
PE	Physical Education

FIFTH QUARTER

EH 108	Classical Literature
or	
EH 253	Literature in English
or	
PA 202	Ethics and Society

MH 264	Anal. Geom. & Calculus
or	
MH 361	Differential Equations
PS 203	Gen. Physics III
EG 105	Engineering Drawing II
MS	Military Training
PE	Physical Education

** EE, IE and MTL require EH 253.
 ME requires either EH 108 or PA 202.
 CE requires EH 108.
 AE and TE require PA 202.

Curricula in Engineering

Humanistic-Social Studies. — The various engineering curricula are arranged to allow students in those curricula the opportunity to schedule a minimum of 30 quarter credit hours of humanistic-social studies. A few courses are prescribed, but the student may choose, in addition, several humanistic-social courses of particular interest to him. The courses from which he may choose these electives are listed below. Others may be taken if approved by the student's department head.

APPROVED ELECTIVES

HISTORY AND GOVERNMENT

HY 107	United States History
HY 204	History of the Modern World
or	
HY 208	World History
HY 207	World History
HY 311	Medieval History
HY 315	International Organization
HY 322	The U.S. in World Affairs
HY 371	History of the West
HY 381	History of Alabama
HY 460	Great Leaders of History
HY 472	History of England
HY	Current Events
PO 206	United States Government

LITERATURE

EH 108	Classical Literature
EH 208	Literature of the Western World
EH 253	Literature in English
EH 254	Literature in English
EH 320	An Introduction to Drama
EH 350	Shakespeare's Greatest Plays
EH 360	Continental Fiction
EH 365	Southern Literature
EH 381	The Literature of the Age of Reason

THE ARTS

AT 431	Contemporary Art
AR 360	Appreciation of Architecture

ECONOMICS

EC 200	General Economics
EC 206	Socio-Economic Foundations of Contemporary America
EC 357	Economic History of Europe
EC 358	Economic History of the U.S.
EC 460	Economic Development of the South

GEOGRAPHY

GY 301	Geo-Political Basis of World Powers
GY 303	Geography of the Soviet Union
GY 405	Cultural Geography of the World
GY 407	World Resources and Their Utilization

SOCIOLOGY

SY 201	Introduction to Sociology
SY 203	Cultural Anthropology
SY 311	Technology and Social Change

SPEECH

SP 310	Great American Speeches
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PHILOSOPHY

PA 202	Ethics and Society
PA 301	Introduction to Philosophy
PA 302	Introduction to Ethics

PA 307 Scientific Reasoning	5	PA 440 American Philosophy	5
or			
PA 308 Introduction to Logic	3	PSYCHOLOGY	
PA 310 Eastern Rel. Thought	3	PG 211 General Psychology	5
PA 315 Western Rel. Thought	3	or	
PA 330 Philosophy of Religion	5	PG 311 Behavior of Man	3
PA 400 Philosophy of Science	5	PG 461 Industrial Psychology	5

Aerospace Engineering

The curriculum in Aerospace Engineering provides an especially good educational background for those wishing to enter the many areas of today's major scientific effort — conquest of space. It also places emphasis on conventional aircraft, missiles and aero-propulsion systems. The first two years of the curriculum are devoted to the basic subjects of mathematics, physics and mechanics. The last two years deal with such broad areas as aerodynamics, design, propulsion, structures and space science. During the senior year students may schedule technical electives in several fields of specialization. The Aerospace Engineering Curriculum also serves as an excellent background for graduate work and research.

Curriculum in Aerospace Engineering (AE)

FRESHMAN YEAR

(See Pre-Engineering Curriculum, Page 127)

SOPHOMORE YEAR

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
MH 264 Analytic Geom. & Calculus .....5	MH 361 Diff. Equations .....5	AE 300 Aerospace Analysis I .....4
PS 202 General Physics II .....5	PS 203 General Physics III .....5	ME 208 Strength of Materials I .....4
ME 205 Applied Mechanics Statics .....4	ME 321 Dynamics of a Particle .....4	ME 322 Dynamics of systems of Particles .....4
AE 205 Aerospace Fund. ....3	ME 301 Thermodynamics I .....4	AE 306 Basic Astronautics ..3
MS Military Training ...1	MS Military Training ...1	ME 202 Engr. Materials Science-Structure ...3
PE Physical Education ..1	PE Physical Education ..1	MS Military Training ...1
		PE Physical Education ..1

JUNIOR YEAR

AE 301 Basic Aerodynamics (Lab.) .....5	AE 413 Theoretical Aerodynamics (Lab.) .....5	AE 404 High Speed Aerodynamics (Lab.) 5
AE 308 Aircraft Structures (Lab.) .....6	AE 409 Aircraft Structures II (Lab.) .....5	AE 310 Aero Anal. II .....4
*PS 301 Intermediate Electricity and Magnetism .....5	*PS 302 Electronics .....5	PA 202 Ethics & Society ..5
***Elective .....3	**SP 210 Public Speaking ..3	***Elective .....4

SENIOR YEAR

AE 440 Performance .....3	AE 431 Astronautics .....5	AE 405 B.L. Theory & Aerodynamic Heat, 3
AE 429 Aircraft Vibration & Flutter .....5	AE *Group Electives .....6	AE 411 Aerospace Design ...3
AE 415 Rocket & Jet Prop. 5	AE ***Elective .....5	AE *Group Electives .....6
AE 403 Stability and Control (Lab.) .....5	AE 401 Aeronautical Problems I .....1	AE ***Electives .....6

Total—228 quarter hours

† Group electives must be approved by the Department Head.

* Students may take PS 301 and 302 or EE 263, EE 361 and one other EE course.

** Six hours of Advanced ROTC may be substituted for SP 210 (3 Hrs.) and three additional hours approved by the Department Head.

*** Electives must be selected from the approved list of Humanistic-Social Studies, subject to approval by the Department Head.

GROUP ELECTIVES

AE 416 Rocket Propulsion I	3	AE 430 Rotary Wing Aircraft	5
AE 417 Rocket Propulsion II	3	ME 421 Heat Transfer	4
AE 420 Flight Vehicle Structures I	3	PS 305 Introduction to Modern Physics	5
AE 421 Flight Vehicle Structures II	3	PS 405 Nuclear Physics	5
AE 441 Dynamic Stability & Control	3	AE 414 Equilibrium Gas Dynamics	3
AE 442 Automatic Stability & Control	3	AE 424 Nonequilibrium Gas Dynamics	3
AE 428 Space Propulsion Systems	5		

Aviation Management

The curriculum in Aviation Management provides education for men and women who plan management careers with the airlines, general aviation, manufacturing, governmental agencies or the military services. The study of fundamental aerospace courses is combined with specified subjects in industrial engineering, business management and selected electives to provide preparation for the various specific functions of the aerospace industries including general management, production, operations, flying, maintenance, and education and training. It also provides a broad educational background of fundamental philosophies, theories, and concepts needed for research and study at the graduate levels.

Curriculum in Aviation Management (AA)

FRESHMAN YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
EH 101 English Comp.	5	MH 161 Anal. Geom. & Cal.	5	PA 202 Ethics & Society	5
MH 160 Algebra & Trig.	5	EH 102 English Comp.	5	PG 211 Intr. to Psy.	5
IL 102 Weld. Sci. & App.	.1	CH 102 Intr. College		MH 162 Anal. Geom. & Cal.	5
EG 102 Engr. Drawing I	.2	Chemistry	.3	EG 105 Engr. Drawing II	.2
HY 107 U.S. History	.5	EG 104 Descrip. Geom.	.2	IL 104 Sheet Metal	.1
MS Military Training	.1	IL 103 Machine Tool Lab.	.1	MS Military Training	.1
PE Physical Education	.1	MS Military Training	.1	PE Physical Education	.1
		PE Physical Education	.1		

SOPHOMORE YEAR

IE 201 Industrial Eng.	.5	EC 215 Fund. of Gen. &		AA 201 Elem. Aeronautics	.5
EC 274 Statistics	.5	Cost Accounting	.5	PO 206 U.S. Government	.5
PS 205 Intr. Physics	.5	EC 200 Gen. Economics	.5	EC 300 Business Organ.	
*SA 113 Typewriting	.3	PS 206 Intr. Physics	.5	& Management	.5
MS Military Training	.1	AA 202 Aerospace History	.3	IE 204 Computer Programming	.3
PE Physical Education	.1	MS Military Training	.1	MS Military Training	.1
		PE Physical Education	.1	PE Physical Education	.1

JUNIOR YEAR

AA 311 Propulsion Fundamentals	.5	AA 312 Guidance & Control Fundamentals	.5	AA 305 Aviation Meteorology	.5
EC 341 Business Law	.5	EH 345 Bus. & Prof. Writ.	.5	IE 310 Work Measurement	.5
PG 461 Industrial Psych.	.5	IE 302 Prod. Control	.5	IE 320 Engineering Economy	.5
AA 309 Aerospace Legislation	.3	**SP 210 Public Speaking	.3	EC 244 Graphic Methods in Business	.3
IE 305 Information Systems	.2				

SENIOR YEAR

AA 402 Aerospace Vehicle Systems	.5	AA 417 Airline Oper.	.5	AA 418 Air Transport	.5
AA 416 Airport Mgt.	.5	EC 442 Personnel Mgt.	.5	EC 445 Indus. Relations of	
Major Elective	.5	Major Elective	.5	EC 400 Industrial Mgt.	.5
General Elective	.3	General Elective	.3	AA 401 Aeronautical Seminar	.1

Total—228 quarter hours

* Students who have one unit of high school typing will not be allowed credit for SA 113. An elective will be substituted.

** Advanced ROTC may be substituted for SP 210 and 8 hours of general electives. Electives must be approved by the Department Head.

Civil Engineering

The Civil Engineering curriculum provides a sound training in mathematics and the physical sciences, in the applied sciences and principles of civil engineering, in a limited number of technical electives, and in humanistic-social studies. The curriculum prepares the graduate for further training by his employer and for the eventual practice of civil engineering. Courses in mathematics and the physical sciences constitute the foundation upon which the successful professional training is built. Technical electives provide for limited specialization in some branch of civil engineering such as highway, hydraulic, sanitary, soils or structural engineering.

Training in civil engineering may lead to professional activities in analysis, design, research, construction, production or sales. Such activities may be directly or indirectly concerned with highways, railroads, dams, and appurtenant structures, rivers, harbors, water supply, sewage disposal, industrial wastes, foundations, buildings, bridges, etc.

The civil engineer holds a leading role in the development of our country. As in most of the professions, great changes are taking place in methods and equipment. The civil engineer will take full advantage of recent advancements in science.

Curriculum in Civil Engineering (CE)

FRESHMAN YEAR

(See Pre-Engineering Curriculum, Page 127)

SOPHOMORE YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
CE 201 Surveying I	5	EH 108 Classical Lit.	5	HY 107 U.S. History	5
MH 264 Anal. Geom. & Cal.	5	PS 203 Gen. Physics III	5	EC 200 Gen. Economics	5
PS 202 Gen. Physics II	5	CE 203 Surveying II	4	MH 361 Diff. Equations	5
ME 202 Eng. Mat. Science	3	ME 205 Statics	4	IE 204 Dig. Comp. Prog.	3
MS Military Training	1	MS Military Training	1	MS Military Training	1
PE Physical Education	1	PE Physical Education	1	PE Physical Education	1

JUNIOR YEAR

CE 320 Hwy. Eng. I	5	CE 304 Theory Struc. I	5	IE 320 Eng. Economy	5
ME 307 Dynamics	5	CE 308 Hydraulics I	3	CE 380 Theory Struc. II	5
IE 303 Eng. Statistics I	4	ME 301 Thermo. I	4	EC 206 Soc.-Ec. Found.	3
ME 208 Strength I	4	CE 314 Photogeology	5	CE 309 Hydraulics II	3

SENIOR YEAR

CE 305 Water Supl. & Disp.	5	CE 405 Water & Waste		**IE 430 Cont. & Specs.	3
CE 404 Reinf. Concrete	5	Treatment	5	CE 408 Foundations	3
CE 418 Soil Mechanics	5	CE 414 Str. Design I	4	CE 422 Senior Seminar	1
EE 304 Elec. Circuits	4	**SP 210 Public Speaking	3	Technical Elective	5

* Soc.-Humanistics
Elective 5

Total—228 quarter hours

* Courses used for electives must be selected from the list of Humanistic-Social Studies subject to approval of the Department Head.

** Six hours of Advanced ROTC may be substituted for SP 210 (3 hrs.) and IE 430 (3 hrs.).

SUGGESTED TECHNICAL ELECTIVES

CE 400 Higher Surveying	5	CE 424 Air Pollution		3
CE 402 Statically Indeterminate Structures	5	CN 440 Nuclear Engineering		5
CE 407 Municipal Engineering I	3	EE 305 Electronics and Instrumentation		5
CE 409 Environmental Health Engr.	5	ME 304 Engr. Materials Science-Properties		3
CE 410 Highway Engineering II	5	ME 335 Engr. Materials Science-Physical Metallurgy		4
CE 411 Flow in Open Channels	5	MH 362 Engineering Mathematics I		5
CE 412 Hydrology	5	MH 404 Engineering Mathematics III		5
CE 413 Hydraulic Structures	5	MH 460 Numerical Analysis I		5
CE 415 Construction Planning	5	MH 461 Numerical Analysis II		5
CE 417 Structural Design II	5	PS 401 Theoretical Physics I—Mechanics		5
CE 419 Municipal Engineering II	3	PS 402 Theoretical Physics II—Mechanics		5
CE 420 Sanitary Engineering Laboratory	5	PS 405 Nuclear Physics		5
CE 421 Water Resources Engineering	5			
CE 423 Similitude in Engineering	3			

Electrical Engineering

The curriculum in Electrical Engineering keeps pace with significant developments in science and technology; provides an educational preparation that assures maximum rate of progress in the engineering profession; and does this within the framework of a sound and extensive humanistic social program.

The Electrical Engineering curriculum is organized around four basic areas of study. These areas provide a firm background in the basic concepts required for all Electrical Engineering students. They are (1) Circuit Analysis, (2) Electronics and Communication, (3) Energy Conversion and Transmission, and (4) Electromagnetic Fields. In addition, the senior year of the curriculum is arranged so that a student, through his choice of technical electives, can concentrate on topics of individual interest. Included in these specialized topics are closed-loop control systems, analog and digital computers, generation and transmission of electrical power, advanced communications systems, solid state electronics, and network synthesis.

All required courses have associated laboratories, in order to keep the student in maximum contact with the realities of the practice of engineering.

Curriculum in Electrical Engineering (EE)

FRESHMAN YEAR

(See Pre-Engineering Curriculum, Page 127)

SOPHOMORE YEAR

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
MH 264 Anal. Geom. & Cal. 5	MH 361 Diff. Equations I ...5	EE 263 Circuit Analysis ...5
PS 202 Gen. Physics II ...5	PS 203 Gen. Physics III ...5	MH 362 Engr. Math. I ...5
ME 205 App. Mech. Statics ...4	ME 321 Dynamics of a Particle ...4	ME 301 Thermodynamics I ...4
ME 202 Engr. Materials Science-Structure ...3	IE 303 Engr. Statistics I ...4	ME 322 Dynamics of Systems of Particles ...4
LY 101 Use of the Library ...1	MS Military Training ...1	MS Military Training ...1
MS Military Training ...1	PE Physical Education ...1	Physical Education ...1
PE Physical Education ...1		

JUNIOR YEAR

EE 361 Circuit Analysis II ...5	EE 362 Circuit Analysis III ...5	EE 363 Distributed Systems ...5
EH 253 Lit. in English ...5	EH 254 Lit. in English ...5	EE 373 Electronics and Communications II ...5
Math., Physics, or Engr. (Not EE)	EE 372 Electronics and Communications I ...4	EE 383 Energy Conversion and Control Systems I ...5
Elective ...5	ME 324 Fluid Mech. I or	*Elective ...3
*Elective ...3	ME 208 Strength of Materials I ...4	

SENIOR YEAR

EE 471 Electronics and Communications III ...5	EE 472 Electronics and Communications IV ...5	EE 493 Electromagnetic Fields III ...5
EE 481 Energy Conversion and Control Systems II ...5	EE 442 Automatic Feedback Control Systems ...5	SP 210 Public Speaking ...3
EE 491 Electromagnetic Fields I ...5	EE 492 Electromagnetic Fields II ...5	EE 413 Physical Electronics 4 **Technical Electives 8
*Elective ...3	EC 206 Soc.-Ec. Foundations of Cont. America ...3	

Total—228 quarter hours

Six hours of Advanced ROTC may be substituted for six required hours with departmental approval.

* See approved list, page 128.

** Technical Electives: EE 443, Solid State Electronics; EE 444, Digital Computers; EE 445, Nuclear Instrumentation; EE 446, Analog Computers; EE 447, Magnetic Devices; EE 461, Introductory Network Synthesis; EE 473, Communication Systems; EE 483, Energy Conversion and Transmission Systems; EE 490, Seminar.

Industrial Engineering

The curriculum in Industrial Engineering prepares one for employment in the design, operation, and control of systems involving men, machines, and materials. Emphasis is placed upon those areas of academic education which are fundamental and pertinent to production and manufacturing; however, the factfinding and analysis approach of Industrial Engineering is applicable to almost any business or service enterprise.

To provide the scientific base required for Industrial Engineering, the student takes sequences of courses in mathematics, physics, chemistry, and engineering science. Part of the engineering science courses are offered through an elective-option arrangement. This base is utilized and reinforced by additional quantitative courses such as engineering statistics, computer programming, linear programming, simulation, and operations research. The economic and human aspects of Industrial Engineering are also recognized through appropriate subjects. Application of this fundamental knowledge is made in courses such as inventory control, production control, budget control, and operations and facilities design.

The philosophy of the Department of Industrial Engineering is to train the student to recognize and solve industrial problems with the most efficient tools available. To the extent possible, this curriculum provides and demonstrates by application the fundamental principles and techniques of Industrial Engineering.

Curriculum in Industrial Engineering (IE)

FRESHMAN YEAR

(See Pre-Engineering Curriculum, Page 127)

SOPHOMORE YEAR

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
MH 264 Anal. Geom. & Cal. 5	EC 200 General Economics 5	EE 263 Circ. Analysis I ... 5
PS 202 Gen. Physics II 5	MH 361 Diff. Equations 5	EH 253 Lit. in English 5
ME 205 App. Mech. Statics 4	PS 203 Gen. Physics III 5	ME 208 Strength of Mat. 4
ME 202 Eng. Mat. Sc.— Struc. 3	IE 204 Computer Prog. 3	ME 301 Thermodynamics I .. 4
LY 101 Use of Library 1	MS Military Training 1	MS Military Training 1
MS Military Training 1	PE Physical Education .. 1	PE Physical Education .. 1
PE Physical Education .. 1		

JUNIOR YEAR

EC 215 Fund. of Gen. and Cost Acc. 5	IE 312 Engr. Statistics II .. 5	IE 310 Work Measurement 5
IE 303 Engr. Statistics I ... 4	IE 320 Engr. Economy 5	IE 322 Quality Control 5
IE 323 Linear Programming 3	IL 310 Dimen. Control 4	IE 304 Stat. Lab. 2
IE 305 Information-Decision Systems 2	*Technical Elective .. 4	*Technical Elective .. 5
*Technical Elective .. 5		

SENIOR YEAR

IE 423 Operations Research 5	IE 422 Inventory Control .. 5	IE 424 Prod. Control 5
IE 416 Ind. Simulation 4	PG 461 Industrial Psych. 5	IE 426 Ind. Budget Control 5
EC 447 Job Evaluation 3	EC 448 Incentive Methods .. 3	IE 428 Operations & Facilities Design 5
Technical Elective .. 5	**Elective 3	**Elective 3
**Elective 3		

Total—228 quarter hours

* An Engineering Science elective sequence must be selected from a list of such sequences which is available in the office of the Department Head.

** Electives to be selected from the approved list of Humanistic-Social Studies, subject to approval of the Department Head. Six hours of advanced ROTC may be substituted with Department Head approval.

Unmarked technical electives should be selected from junior or senior level engineering, mathematics, or physics courses with Department Head approval.

Mechanical Engineering

Students who complete the curriculum in Mechanical Engineering have a broad field from which to select their life's work. Industrial positions in manufacturing, marketing, maintenance, and design are available to graduate mechanical engineers in a large variety of companies which produce mechanical, chemical, electrical, aeronautical, and petroleum products. In addition, the graduate is prepared by his college training, when supplemented by experience and practical training, to specialize in management or engineering services, such as consulting and sales. The curriculum also is suitable for students intending to enter the fields of engineering education and research. It is an excellent base for further study at the graduate level in this and allied fields.

The curriculum provides the student with a strong background in mathematics and the physical sciences. The basic engineering science fields of engineering mechanics, materials science, thermodynamics, fluid mechanics, and heat transfer are covered in depth to provide the student with understanding and the ability to solve problems in these areas. In addition, professional training is given in combustion engines, including gas turbines and rockets, power plants, air conditioning, refrigeration, automatic controls, turbomachinery and machine design. A series of courses in electrical theory and electronics is also included to equip the graduate with needed fundamental knowledge in this rapidly expanding field.

Humanistic-social subjects are required to give the student breadth and to add to his general education.

Technical electives are provided in the senior year of the curriculum to enable students to specialize to a limited extent. Students intending to undertake graduate studies may take additional mathematics in lieu of certain professional technical electives.

Curriculum in Mechanical Engineering (ME)

FRESHMAN YEAR

(See Pre-Engineering Curriculum, Page 127)

SOPHOMORE YEAR

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
PS 202 Gen. Physics II 5	PS 203 Gen. Physics III 5	EE 263 Circuit Analysis I 5
MH 264 Anal. Geom. & Cal. 5	MH 361 Differential Equations 5	MH 362 Engr. Math. I 5
ME 205 Applied Mechanics— Statics 4	ME 321 Dynamics of a Particle 4	ME 304 Engr. Materials Science—Properties 3
ME 202 Engr. Materials Science—Structure 3	ME 208 Strength of Materials I 4	ME 322 Dynamics of Sys- tems of Particles 4
LY 101 Use of Library 1	MS Military Training 1	MS Military Training 1
MS Military Training 1	MS Military Training 1	PE Physical Education 1
PE Physical Education 1	PE Physical Education 1	PE Physical Education 1

JUNIOR YEAR

EH 108 Classical Literature or	EE 372 Electronics & Communications I 4	ME 335 Engr. Materials Science—Physi- cal Metallurgy 4
PA 202 Ethics & Society 5	ME 302 Thermodynamics II 4	ME 325 Fluid Mechanics II 4
EE 361 Circuit Analysis II 5	ME 324 Fluid Mechanics I 4	ME 323 Dynamics of Machines 4
ME 301 Thermodynamics I 4	ME 311 Measurements Lab., I 2	ME 303 Thermodynamics III 4
ME 308 Computation Labo- ratory 1	**General Elective 3	PA 308 Introduction to Logic 3
ME 316 Strength of Materials II 4	ME 309 Materials Testing Lab. 1	

* Six hours of Advanced ROTC may be substituted for SP 210 and three additional hours approved by the Department Head.

** Electives must be selected from the list of Humanistic-Social Studies, subject to approval of the Department Head.

FIRST QUARTER		SENIOR YEAR		THIRD QUARTER	
ME 421 Heat Transfer	4	ME 415 Thermodynamics of Power Systems	4	ME 451 Advanced Projects ..	3
ME 439 Machine Design I ..	4	ME 440 Machine Design II ..	4	EC 206 Socio-Economic Foundations of Contemporary America ..	3
ME 327 Mechanical Vibrations	4	ME 420 Thermal Systems Lab.	2	**General Electives ..	6
*SP 210 Public Speaking ..	3	**General Elective ..	3	Technical Elective ..	5
ME 413 Measurements Lab. II	1				
**General Elective ..	3				

Total—228 quarter hours

* Six hours of Advanced ROTC may be substituted for SP 210 and three additional hours approved by the Department Head.

** Electives must be selected from the list of Humanistic-Social Studies, subject to approval of the Department Head.

SUGGESTED TECHNICAL ELECTIVES

In addition to the subjects listed below, other subjects may be used as technical electives upon approval of the Head of the Department and the Dean of Engineering.

CE 304 Theory of Structures	5	ME 432 Automatic Controls	4
CE 305 Water Supply	5	ME 436 Engineering Materials Science—Ferrous Metallurgy	4
CE 402 Indeterminate Structures	5	ME 437 Engineering Materials Science—Non Ferrous Metallurgy	4
CE 404 Reinforced Concrete	5	ME 438 Residual Stresses in Metals	4
CN 440 Nuclear Engineering	5	ME 441 Engineering Systems I	4
EE 362 Circuit Analysis III	5	ME 442 Engineering Systems II	4
EE 363 Distributed Systems	5	ME 443 Photoelastic Stress and Strain Analysis	4
EE 383 Energy Conversion & Transmission I ..	5	ME 450 Special Problems	1-5
EE 491 Electromagnetic Fields I	5	MH 403 Engineering Mathematics II or	
IE 303 Engineering Statistics I	4	MH 404 Engineering Mathematics III or	
IE 320 Engineering Economy	5	MH 460 Introduction to Numerical Analysis ..	5
IL 450 Engineering Metrology	1-5	PS 305 Introduction to Modern Physics ..	5
ME 401 Statistical Thermodynamics	4	PS 413 Introduction to X-Ray Crystallography ..	5
ME 414 Turbomachines	4		
ME 422 Transport Phenomena	4		
ME 425 Gas and Steam Turbines	4		
ME 428 Air Conditioning and Refrigeration ..	4		

Metallurgical Engineering

The curriculum in Metallurgical Engineering is administered by the Department of Mechanical Engineering of the School of Engineering, in cooperation with the Department of Chemical Engineering of the School of Chemistry.

Metallurgical Engineering includes both the design of metallurgical processes and the design of metals to meet specific needs. Metallurgical Engineers are employed in the basic metallurgical, electronics, aerospace, mechanical, process, chemical, and nuclear power industries. Today, many Metallurgical Engineers occupy key positions in industry, government, private research laboratories, and in educational institutions.

The curriculum in Metallurgical Engineering is planned to provide the necessary foundation in the humanities, basic sciences, engineering sciences, and particularly in the science of the relationship of structure to properties. The curriculum will prepare the Engineer for effective industrial professional practice or graduate study. With a relatively small amount of additional study, he will be prepared to work with other types of engineering materials such as plastics, semiconductors, ceramics, natural materials, and superconductors.

The courses in Metallurgical Engineering include the subjects of extractive, process, and physical metallurgy with particular emphasis on the latter and on its relation to design. The equipment available is comprehensive and modern and includes metallurgical microscopes, X-ray diffraction and radiographic facilities, an electron microscope, and mechanical processing and testing machines.

Curriculum in Metallurgical Engineering (MTL)**FRESHMAN YEAR**

(See Pre-Engineering Curriculum, Page 127)

SOPHOMORE YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
MH 264	Anal. Geom. & Cal. 5	†CH 105	General Chemistry 3	CH 204	Analytical Chem. ....5
EC 206	Socio-Econ. Found. of Cont. America ...3	CH 105L	Gen. Chem. Lab. ....2	MH 361	Diff. Equations ....5
PS 202	Gen. Physics II .....5	PS 203	Gen. Physics III .....5	ME 304	Engr. Materials Science—Properties 3
ME 205	Applied Mechanics— Statics .....4	ME 202	Engr. Materials Science—Structure ..3	EH 253	Lit. in English .....5
MS	Military Training ....1	ME 208	Strength of Materials I .....4	MS	Military Training ....1
PE	Physical Education ..1	MS	Military Training ....1	PE	Physical Education ..1

JUNIOR YEAR

CH 407	Physical Chem. ....5	CH 408	Physical Chem. ....5	CH 412	Chemical Thermodynamics ....5
ME 335	Engr. Materials Science—Phys. Met. 4	ME 336	Metallography & Heat Treat. I .....4	ME 337	Metallography & Heat Treat. II .....4
EE 263	Circuit Anal. I .....5	EE 361	Circuit Anal. II .....5	CN 427	Extractive Metallurgy .....5
ME 316	Strength of Materials II .....4	PS 413	Intr. to X-ray Crystallography .....5	EE 372	Electronics & Communications I ..4

SENIOR YEAR

CN 402	Heat Transfer for Metallurgists .....5	EC 200	General Economics 5	ME 447	Adv. Physical Metal- lurgy—Plasticity ....4
EH 254	Literature in English .....5	ME 446	Advanced Physical Metallurgy—Theo- retical Met. .....4	ME 451	Adv. Projects (Metallurgical Design) .....3
ME 338	Phase Diagrams .....4	ME 437	Engr. Materials Science—Non- Ferrous Met. .....4	*SP 210	Public Speaking ...3
ME 436	Engr. Materials Science—Ferrous Metallurgy .....4	*Elective .....5	**Electives .....9		

Total—228 quarter hours

* The sequence, CH 111, CH 112, and CH 113, may be substituted for the sequence, CH 103/CH 103L, CH 104/CH 104L, and CH 105/CH 105L.

* Six hours of Advanced ROTC may be substituted for SP 210 and three additional hours approved by the Department Head.

** Electives must be selected from the list of Humanistic-Social Studies, subject to approval of the Department Head.

Textile Engineering

The Department of Textile Engineering is equipped with full-size machinery of a complete textile mill for the manufacture of a wide variety of fabrics from the processing of the raw material to the weaving of the finished product. Included are laboratories for bleaching, dyeing, finishing, and the physical and chemical testing of fibers and fabrics.

The textile industry is the largest industry in Alabama, comprising more than 25 per cent of the total industrial working force in the State. The greater portion of the textile industry, making yarn on the cotton system, is located in the South and Southeast. In the Southern Region alone, there are some 1500 plants which process cotton, rayon, nylon, wool, and paper and an almost unlimited number of finished products. The industry is growing rapidly in all branches.

The size and diversity of the textile and allied industries, including manufacturers of textile machinery and equipment, chemicals and dyestuffs, research laboratories, textile supply and sales houses, afford unusual opportunities for college-trained men and women. New fields of employment are opening in research and development and in the process of new fibers. The need for college graduates in textile engineering has never been greater than at the present time, nor is the demand likely to be met within the next several years.

The Department of Textile Engineering offers three curricula to prepare students for all areas of the industry. The Textile courses in these curricula are combined with courses offered by other departments of the University to provide basic instruction in the fundamental sciences, engineering, technology and humanistic-social studies. The three curricula are:

Textile Engineering. — The curriculum in Textile Engineering trains men and women in the basic engineering sciences. It includes basic engineering sciences, humanistic-social studies, and textile subjects needed for a basic understanding of the textile industry. It prepares students for graduate study and careers in textile research, engineering, production and management in the textile industry as well as in other allied industries, such as the manufacture of textile machinery and man-made fibers.

Textile Chemistry. — The curriculum in Textile Chemistry trains students in the chemistry of natural and man-made fibers and in the theory and practice of textile dyeing and finishing. It prepares students for graduate work and careers as chemists and dyers in the textile, man-made fibers, dyestuff and other allied industries.

Textile Management. — The curriculum in Textile Management prepares the student for production, administrative and managerial positions in the textile and allied industries. Emphasis is placed on production and operational functions and the humanistic-social studies with the inclusion of textile subjects. Students are permitted in their junior and senior years to major in production, sales, or design according to their interests and professional needs.

The Alabama textile industry cooperates with the Department of Textile Engineering by assisting worthy young men and women to obtain a college education through the Cooperative Education Program, which is described on page 43 of this catalog.

The Department of Textile Engineering is organized and equipped to conduct applied and fundamental research. In cooperation with the Auburn Research Foundation, the Engineering Experiment Station, and other departments of the University, the department serves the textile industry of the region through the full utilization of its facilities.

Curriculum in Textile Engineering (TE)

FRESHMAN YEAR

(See Pre-Engineering Curriculum, Page 127)

SOPHOMORE YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
MH 264	Anal. Geom. & Cal. 5	TE 211	Yarn Mfg. I 5	EC 200	General Economics 5
PS 202	Gen. Physics II 5	PS 203	Gen. Physics III 5	TE 220	Weaving Design I 5
TE 210	Fiber Processing 5	MH 361	Differential Equations 5	ME 205	App. Mechs.— Statics 4
TE 101	Intr. to Textiles 1	IE 204	Computer Programming 3	ME 202	Engr. Materials Science—Structure 3
MS	Military Training 1	MS	Military Training 1	MS	Military Training 1
PE	Physical Education 1	PE	Physical Education 1	PE	Physical Education 1

JUNIOR YEAR

TE 307	Bleach & Dyeing 5	EE 305	Electronics & Instrumentation 5	EE 306	Machinery & Power Transmission 5
TE 322	Yarn Mfg. II 5	TE 320	Weaving Design II 5	ME 307	App. Mechanics— Dynamics 5
EE 304	Electrical Circuits 4	ME 304	E.M.S.—Properties 3	TE 317	Dyeing & Fin. 5
ME 208	Strength of Materials 4	EH 304	Technical Writing 3	TE 324	Physical Test. 3
		TE 305	Fiber Technology 3	TE 319	Chem. Testing 2

FIRST QUARTER

TE 405 Warp Preparation	.....	5
ME 301 Thermodynamics I	.....	4
SP 210 Public Speaking	.....	3
TE 431 Fabric Analysis	.....	3
Elective	.....	5

SENIOR YEAR**SECOND QUARTER**

PG 461 Industrial Psychology	.....	5
TE 406 Textile Costing	.....	5
TE 412 Textile Mgt.	.....	3

THIRD QUARTER

TE 401 Engineering Aspects of Textile Materials & Processes	.....	5
Technical Elective	.....	5
Elective	.....	6

Total—228 quarter hours

General electives must be selected from the approved list of Humanistic-Social Studies, subject to approval of the Department Head. Six hours of Advanced ROTC may be substituted with Department Head approval.

SUGGESTED TECHNICAL ELECTIVES

In addition to the subjects listed below, other subjects may be used as technical electives with approval of the Department Head.

PS 305 Introduction to Modern Physics	.....	5
ME 428 Air Conditioning and Refrigeration	.....	4
IE 303 Engineering Statistics I	.....	4
IE 310 Work Measurement	.....	5

Curriculum in Textile Chemistry (TC)**FRESHMAN YEAR****FIRST QUARTER**

CH 111 Gen. Chemistry	.....	5
EH 101 English Comp.	.....	5
MH 160 Algebra & Trig.	.....	5
TE 101 Intr. to Textiles	.....	1
IL 103 Machine Tool Lab.	.....	1
MS Military Training	.....	1
PE Physical Education	.....	1

SOPHOMORE YEAR

MH 163 Anal. Geom. & Cal.	.....	5
PS 201 Gen. Physics I	.....	5
TE 210 Fiber Process	.....	5
SP 210 Public Speaking	.....	3
MS Military Training	.....	1
PE Physical Education	.....	1

JUNIOR YEAR

CH 204 Analytical Chem.	.....	5
TE 320 Weav. & Design II	.....	5
EH 304 Tech. Writing	.....	3
PG 311 Behavior of Man	.....	3
Elective	.....	3

SENIOR YEAR

CH 304 Organic Chemistry	.....	5
TE 405 Warp Prep.	.....	5
TE 412 Tex. Management	.....	3
TE 324 Phy. Testing	.....	3
Elective	.....	3

Total—228 quarter hours

General electives must be selected from the approved list of Humanistic-Social Studies, subject to approval of the Department Head.

SUGGESTED TECHNICAL ELECTIVES

In addition to the subjects listed below, other subjects may be used as technical electives with approval of the Department Head.

CH 305 Organic Chemistry	.....	5
CH 404 Organic Analysis (Qualitative)	.....	5
CN 432 Instrumentation and Control	.....	4
ME 208 Strength of Materials I	.....	4
ME 310 Thermodynamics	.....	5
MH 361 Differential Equations	.....	5
IE 303 Engineering Statistics	.....	4
IE 320 Engineering Economy	.....	5
PS 305 Introduction to Modern Physics	.....	5
TE 321 Weaving and Designing III	.....	5
TE 322 Yarn Manufacture II	.....	5
TE 418 Jacquard Weaving and Design	.....	2
TE 425 Man-Made Fibers II	.....	5
TE 431 Fabric Analysis	.....	3

Curriculum in Textile Management (TM)

FRESHMAN YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
EH 101 English Comp. ....5	CH 102 Intr. to Chem. ....3	PS 204 Survey in Physics ..5			
HY 107 United States Hist. 5	EH 102 English Comp. ....5	PG 211 Gen. Psychology ...5			
MH 121 College Math. ....5	MH 122 College Math. ....5	PA 202 Ethics and Society ..5			
TE 101 Intr. to Textiles ....1	EG 102 Engr. Drawing I ..2	MS Military Training ...1			
MS Military Training ....1	IL 103 Mch. Tool Lab. ....1	PE Physical Education ..1			
PE Physical Education ..1	MS Military Training ....1	PE Physical Education ..1			

SOPHOMORE YEAR

EC 206 Soc. Ec. Foundation 3	EC 202 Economics II .....5	IE 201 Indus. Engr. ....5
EC 200 Gen. Econ. ....5	SY 201 Intr. to Sociology ..5	PO 206 U.S. Govt. ....5
TE 210 Fiber Processing ....5	TE 220 Weaving & Design 5	TE 211 Yarn Mfg. I .....5
TE 305 Fiber Technology ..3	SP 210 Public Speaking ....3	MS Military Training ...1
MS Military Training ....1	MS Military Training ....1	PE Physical Education ..1
PE Physical Education ..1	PE Physical Education ..1	

JUNIOR YEAR

EC 274 Statistics .....5	TE 317 Dyeing & Finishing 5	EH 345 Bus. & Prof. Writ. ..5
TE 307 Bleaching & Dyeing 5	TE 320 Weaving & Des. II 5	TE 319 Chemical Testing ...2
TE 322 Yarn Mfg. II .....5	TE 324 Physical Testing ...3	TE 321 Weaving &
Gen. Elective .....3	TE 325 Textile Qual.	Design III .....5
	Control .....2	TE 418 Jacquard Weav.
	Gen. Elective .....3	& Design .....2
		Gen. Elective .....3

SENIOR YEAR

EC 445 Industrial Relations 5	EC 442 Personnel Mgt. ....5	TE 424 Man-Made Fibers I 5
TE 406 Textile Costing ....5	TE 405 Warp Preparation ...5	TE 412 Textile Management 3
Tech. Elective .....5	Tech. Elective .....5	TE 431 Fabric Analysis ...3
Gen. Elective .....3	Gen. Elective .....3	Tech. Elective .....5
		Gen. Elective .....3

Total—216 quarter hours

Textile Management students will take the above curriculum plus three of the technical electives in accordance with interests and professional needs. General electives may be selected from approved list on page 128. Substitutions not included on either of these lists may be made with the approval of the Department Head.

APPROVED TECHNICAL ELECTIVES

IE 301 Data Processing ....5	EC 215 Fundamentals of Accounting .....5	EC 436 Bus. Res. Methods ..5
IE 302 Production Contrl. ..5	EC 331 Prin. of Marketing ..5	HE 415 Hist. of Textiles ...5
IE 320 Engr. Economy ....5	EC 333 Salesmanship .....5	PG 360 Applied Psychology 5
IE 426 Ind. Budgeting .....5	EC 341 Business Law .....5	PG 461 Indus. Psychology ...5
IE 430 Contracts & Spec. ..3	EC 300 Bus. Organization ..5	TE 425 Man-Made Fibers II 5
IE 438 Safety Engr. ....5		

School of Home Economics

NORMA H. COMPTON, *Dean*

HOME ECONOMICS at Auburn University is a professional program with its roots in the arts, sciences and humanities. Areas of specialization are concerned with all aspects of environment, health and human development. Home Economics is a complex of studies serving many purposes—broad liberal education for the unknown future, preparation for professional careers, and a background for home and family living. A basic core of subjects in liberal education is required of all undergraduate majors. All courses are open to both men and women students.

With emphasis on both breadth of knowledge and its application to the solution of human problems, Home Economics offers professional or preprofessional preparation for an increasing variety of positions. The Home Economics degree enables graduates to earn above-average salaries. Numerous positions of leadership are offered to majors in education, business, industry, and government.

Programs

Programs of study leading to the Bachelor of Science degree can be planned within seven curricula in the School of Home Economics. These curricula are designed with flexibility to meet the needs of students with varying interests.

Each student is assigned a faculty adviser under whose guidance a program is planned. Early in the junior year students are requested to reserve a place in one of the Home Management Houses for the quarter of their choice.

Majors in the School of Home Economics

- I. **Clothing and Textiles** which provides a comprehensive view of textiles—their properties and use in the home and in garment structures—as well as their socio-cultural significance. Knowledge can be applied in such varied fields as: merchandising, apparel design and production, consumer evaluation of textiles and garments, journalism, teaching, research, welfare and social planning.
- II. **Family Life and Early Childhood Education** which prepares for professional work with families and individuals of all age levels with challenging careers in programs for young children and youth, social welfare, family life education and business.
- III. **Foods and Nutrition** which prepares majors for positions in research, teaching, extension, communications (journalism, radio, television), food service, dietetics (therapeutic, clinical, consulting, administrative). Such

positions are available in private industry, hospitals, government agencies and educational institutions.

- IV. Home Management and Family Economics** which is designed for students interested in a broad general education in home economics. Professional preparation is offered for positions in consumer economics, family economics, financial counseling, Cooperative Extension Service, home service and other areas of business, requiring a background in home management and social science. Valuable experience may be gained for graduate study.
- V. The Housing and Equipment Program** which prepares students for positions with public utilities, manufacturers, retail dealers, research centers, governmental agencies, retail associations, and other business areas in Home Economics. This curriculum serves and prepares professional homemakers, those engaged in adult education and Cooperative Extension. Courses from this program may be elected by students in other curricula; examples include programs centered on safety education, house structure, engineering and the applications of physics.
- VI. Institution Food Management** which trains both men and women to manage efficiently commercial, industrial, and institution food service operations. Food production, consumption and service is today the third largest business in the world and demands highly trained personnel.
- VII. Pre-Nursing Science** which provides Nursing Science majors with a basic 2-year program. Upon satisfactory completion, students will be assisted with transfer to an accredited School of Nursing for completion of the baccalaureate program in nursing. The Emory University, the University of Alabama, and other accredited schools of nursing have approved this program as meeting their pre-nursing requirements.

Graduate Work

The School of Home Economics offers work leading to the Master of Science degree, Master of Arts degree, and to the professional degree, Master of Home Economics. For further information consult the Home Economics course descriptions and the graduate catalog.

Child Study Laboratories

The School of Home Economics provides three laboratories for the study of child development and human relations, two nursery schools for children three to five years of age and a kindergarten for five year olds. The nursery school meets from 9:00 a.m. to 12 noon. A hot lunch is served to the 3-year olds. The kindergarten is in session from 1 to 4 p.m. Children admitted to the child study laboratories are selected from an application list. Applications may be placed with the office of Family Life and Early Childhood Education when the child is $1\frac{1}{2}$ years old. Children are admitted on an early application basis and laboratory needs.

Basic Curriculum for all Freshmen and Sophomores in Home Economics (HE)

		FRESHMAN YEAR			
		SECOND QUARTER			
		THIRD QUARTER			
FIRST QUARTER					
EH 101 English Comp.	5	EH 102 English Comp.	5	EH 253 Lit. in English	5
HE 104 Related Art	5	HE 102 Basic Foods & Nutr.	5	HE 105 Fund. of Clothing	5
MH 107 College Algebra*	5	CH 103 General Chem.†	4	CH 104 General Chem.†	4
HE 110 Fresh. Orientation ..1		CH 103L Gen. Chem. Lab. ....1		CH 104L Gen. Chem. Lab. ....1	
PE Physical Education ..1		HE 111 Fresh. Orientation ..1		HE 112 Fresh. Orientation ..1	
		PE Physical Education ..1		LY 101 Library Science ....1	
				PE Physical Education ..1	
SOPHOMORE YEAR					
CH 203 Organic Chem.**** or		EC 211 Accounting**** or		EC 200 General Economics 5	
HY 208 World History ....5		HE 205 Clothing for the Family ....5		HE 225 Textiles** or	
HE 202 Meal Management ..5		PG 211 Gen. Psychology ....5		HE 233 Home Equip.*** or	
SY 201 Sociology ....5		PS 204 Physics ....5		HE 312 Nutritional Bio-chemistry† or	
HE 207 Principles of Child Development ....3		SP 210 Public Speaking ....3		HE 307 Growth & Dev. of Children***** ....5	
PE Physical Education ..1		PE Physical Education ..1		VM 210 Physiology ....5	
				JM 315 Ag. Journalism ....3	
				PE Physical Education ..1	

* MH 107 required of all majors—Pr. for CH 103 and CH 103L.

** Required of Clothing Textile majors only.

*** Required of Home Management and Family Economics majors, Housing and Equipment majors, and Family Life and Early Childhood Education majors only.

**** Required of Foods and Nutrition and Housing and Equipment majors.

***** Required of Family Life and Early Childhood Education majors only.

† Required of Foods and Nutrition majors only.

‡ Family Life and Early Childhood Education majors may substitute VM 220 and VM 221 for CH 103 and CH 104. This would preclude use of VM 210.

Suggested minors in Speech, Journalism or combination of both. (Consult your Adviser before scheduling SP 210 or JM 315.)

Public Speaking, Radio, and Television: SP 211, 273, 311 and 230, or 211, 230, 334 and 234.

News writing, Reporting, Copyreading and Editing and Feature writing: JM 221, 223, 224 and 322.

Combination minor: JM 221, SP 211, or Workshop, JM 322, SP 230 or SP 210.

Curriculum for Majors in Clothing and Textiles

		JUNIOR YEAR			
		SECOND QUARTER			
		THIRD QUARTER			
FIRST QUARTER					
HE 303 The House ....5		HE 395 Clothing Design ....5		HE 323 Home Mgt. ....5	
HE 325 Fund. of Retailing ..5		Social Sc. Elective		Elective ....5	
VM 311 Bacteriology ....5		or		Prof. Elective ....5	
HE 372 Nutr. & Health ....3		FED 214 Ed. Psychology ....5		HE 305 Tailoring ....3	
		Prof. Elective ....5			
		HE 385 Creative Weaving ..3			

SENIOR YEAR

HE 307 Growth & Dev. of Children ....5	HE 425 Hist. of Costume ....5	HE 313 Home Furnishing ....5
HE 415 History of Textiles ..5	HE 435 Textile Testing ....5	HE 405 Creative Costume Design ....5
HE 443 Home Mgt. Res. ....5	Prof. Elective ....5	Prof. Elective ....5
HE 431 Senior Seminar ....3	Elective ....3	Elective ....3

Total—214 quarter hours

Electives must be chosen from one field to make a strong minor; suggested minors are Art, Chemistry, Economics, Education, Journalism, or Textile Technology.

HE 335 Retail Training (8 cr.) must be scheduled by students electing to minor in Retailing.

Curriculum for Majors in Family Life and Early Childhood Education

		JUNIOR YEAR			
		SECOND QUARTER			
		THIRD QUARTER			
FIRST QUARTER					
HE 303 The House ....5		HE 417 Guid. of Children ....5		HE 313 Home Furnishing ....5	
FED 214 Ed. Psychology ....5		Prof. Elective ....5		HE 323 Home Mgt. ....5	
Prof. Elective ....5		VM 311 Bacteriology ....5		Soc. Sc. Elective ....5	
HE 353 Comm. & Fam. Health ....3		HE 304 Home & Fam. Life 3		Elective ....3	

SENIOR YEAR

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
HE 437 Teach. Meth. in Pre-Primary Ed. ....5	HE 447 Directed Teaching in Pre-Primary Ed. ....5	IED 472 Books & Related Mater. for Child ....4
HE 443 Home Mgt. Res. ....5	HE 463 Family Economics ....5	HE 431 Senior Seminar ....3
HE 457 Family Relationships 5 Elective .....3	HE 392 Family Nutrition ....5 Elective .....3	Prof. Electives ....8

Total—214 quarter hours

Electives must be chosen to build a strong minor in Economics, Education, Psychology, Sociology, Speech, or Journalism.

Curriculum for Majors in Foods and Nutrition**JUNIOR YEAR**

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
HE 332 Nutrition & Diet. I 5	HE 342 Nutrition & Diet. II 5	HE 323 Home Management 5
HY 208 World History ....5	VM 311 Bacteriology .....5	FED 214 Ed. Psychology ....5
HE 355 Consumer Textiles ..3	HE 352 Inst. Organization & Personnel Management .....5	HE 302 Cultural Aspects of Food Service .....3
Elective .....5	HE 442 Catering .....3	Elective .....5

SENIOR YEAR

FL French or German ..5	FL French or German ..5	HE 402 Diet Therapy .....5
HE 257 The Family and Human Develop. ....5	HE 462 Experimental Foods 5 Elective .....5	HE 422 Inst. Food Purchasing .....5
HE 412 Quantity Food Production .....5		HE 443 Home Mgt. Res. ....5
HE 322 Food Preservation ..3		HE 431 Senior Seminar ....3

Total—214 quarter hours**Curriculum for Majors in Home Management and Family Economics****JUNIOR YEAR**

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
HE 303 The House .....5	VM 311 Bacteriology .....5	FED 214 Ed. Psychology or Social Sc. Elective ..5
HE 323 Home Management 5	HE 313 Home Furnishings ..5	HE 307 Child Development 5
HE 343 Int. Home Prob. ....5	HE 333 Lighting Equip. ....3	HE 355 Consumer Textiles ..3
HE 372 Nutr. & Health ....3	Elective .....5	Elective .....5

SENIOR YEAR

HE 322 Food Preservation ..3	HE 353 Com. & Fam. Health .....3	HE 401 Extension Organization & Methods ..5
HE 304 Home & Family Life 3		HE 417 Guid. of Children or
HE 431 Senior Seminar ....3	HE 433 Food Equipment ....5	HE 457 Family Relations ..5
HE 443 Home Management Residence .....5	HE 463 Family Economics ..5	Elective .....5
HE 453 Consumer and the Market .....5	Elective .....4	

Recommended electives: English, Social Science or Zoology.

Total—214 quarter hours**Curriculum for Majors in Housing and Equipment****JUNIOR YEAR**

FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
HE 303 The House .....5	HE 333 Lighting .....3	HE 313 Home Furnishings ..5
HE 323 Home Management 5	VM 311 Bacteriology .....5	AR 360 Apprec. of Arch. ....3
HE 372 Nutr. & Heath ....3	HE 373 Demon. Home Eq. ..3	HE 343 Int. Home Problems 5
Elective .....5	Electives .....7	Elective .....5

SENIOR YEAR

HE 457 Farm. Relationship ..5	HE 493 House Utility Core ..3	HE 433 Food Equip. .....5
HE 423 Eq. & Housing Tech. .....5	HE 463 Family Economics ..5	HE 453 Cons. & Mkt. ....5
HE 483 Laundry Eq. & Clothing Care .....5	HE 462 Exper. Foods .....5	HE 443 Home Mgt. Res. ....5
HE 431 Senior Seminar .....3	Elective .....5	

Total—214 quarter hours

Curriculum in Institution Food Management

FRESHMAN YEAR		
FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
EH 101 English Comp. ....5 MH 107 College Algebra* ....5 HE 102 Basic Foods & Nutr. ....5 LY 101 Library Science ....1 PE Physical Education ..1 MS Military Tr.—Men or Elective—Women ..1	CH 103 General Chemistry ..4 CH 103L Gen. Chem. Lab. ..1 EH 102 English Comp. ....5 HY 208 World History ....5 PE Physical Education ..1 MS Military Tr.—Men or Elective—Women ..1	CH 104 General Chemistry ..4 CH 104L Gen. Chem. Lab. ..1 EH 253 Literature in English .....5 HE 202 Meal Management ..5 PE Physical Education ..1 MS Military Tr.—Men or Elective—Women ..1
SOPHOMORE YEAR		
CH 203 Organic Chemistry ..5 EC 211 Accounting .....5 SY 201 Sociology .....5 PE Physical Education ..1 MS Military Tr.—Men or Elective—Women ..1	EC 212 Accounting .....5 EC 200 Economics .....5 PS 204 Physics .....5 PE Physical Education ..1 MS Military Tr.—Men or Elective—Women ..1	PG 211 General Psychology 5 VM 210 Physiology .....5 EC 202 Economics .....5 JM 315 Agr. Journalism .....3 PE Physical Education ..1 MS Military Tr.—Men or Elective—Women ..1
JUNIOR YEAR		
HE 412 Quality Food Product .....5 EC 341 Business Law .....5 SP 210 Public Speaking ....3 Elective .....5	VM 311 Bacteriology .....5 HE 352 Inst. Org. & Personnel Management 5 HE 372 Nutrition & Health 3 Elective .....5	EC 333 Salesmanship .....3 EC 331 Prin. of Marketing ..5 HE 362 Problems in Comm. Nutrition .....3 Electives .....7
SENIOR YEAR		
EC 432 Advertising .....3 HE 432 Food Serv. Planning Lay-Out & Equip. ..5 HE 453 Consumer & the Market .....5 Elective .....5	HE 462 Experimental Foods 5 DH 411 Food Plant Sanitation .....3 HE 442 Catering .....3 Electives .....7	HE 422 Inst. Food Purchasing .....5 HE 482 Food Serv. Cost Cont. .....5 Electives .....8

Total—214 quarter hours

* MH 107 Pr. for CH 103 and CH 103L.

Note: Students qualifying for ADA membership through therapeutic and administrative dietetics will be required to take HE 312, Nutritional Biochemistry; HE 332, 342, Nutrition HE 402, Diet Therapy, and PG 214, Educational Psychology.

Curriculum in Pre-Nursing Science (NS)

FRESHMAN YEAR		
FIRST QUARTER	SECOND QUARTER	THIRD QUARTER
HE 104 Related Art .....5 EH 101 English Comp. ....5 MH 107 College Algebra** 5 HE 110 Fresh. Orientation ..1 PE Physical Education ..1	HE 102 Basic Foods and Nutr. ....5 EH 102 English Comp. ....5 CH 103 General Chemistry ..4 CH 103L Gen. Chem. Lab. ..1 HE 111 Fresh. Orientation ..1 PE Physical Education ..1	HY 107 History of U.S. ....5 ZY 101 General Zoology .....5 CH 104 General Chemistry ..4 CH 104L Gen. Chem. Lab. ..1 LY 101 Library Science ....1 HE 112 Fresh. Orientation ..1 PE Physical Education ..1
SOPHOMORE YEAR		
CH 203 Organic Chemistry ..5 SY 201 Sociology .....5 ZY 102 Zoology* or VM 220 Human Anatomy & Physiology** .....5 HE 207 Principles of Child Development .....3 PE Physical Education ..1	PG 211 General Psychology 5 HY 208 World History* or VM 221 Human Anatomy & Physiology** .....5 PA 330 Philosophy of Religion* or PS 204 Physics** .....5 HE 372 Nutrition & Health 3 PE Physical Education ..1	EH 253 Lit. in English .....5 HE 312 Nutritional Biochemistry .....5 PG 214 Educational Psychology .....5 HE 362 Problems in Community Nutr. ....3 PE Physical Education ..1

Total—109 quarter hours

Note: Upon satisfactory completion of the 2-year pre-nursing program, students will be assisted with transfer to an accredited School of Nursing for completion of the baccalaureate program in nursing. Emory University School of Nursing and the University of Alabama School of Nursing have approved this program as meeting their pre-nursing requirements.

* Courses required only by Emory University.

** Courses required only by the University of Alabama.

*** MH 107 Pr. for CH 103 and CH 103L.

School of Pharmacy

SAMUEL TERRY COKER, *Dean*

THE SCHOOL OF PHARMACY is a member in good standing of the American Association of Colleges of Pharmacy, the object of which is to promote pharmaceutical education. It is also fully accredited by the American Council on Pharmaceutical Education, the object of which is to formulate the educational, scientific and professional principles and standards which approved Schools of Pharmacy are expected to meet and maintain.

Careers in Pharmacy

The thorough academic background provided by the five-year curriculum prepares students to pursue a variety of careers. Excellent opportunities exist in the following area: community or retail pharmacy, wholesale pharmacy, industrial pharmacy (research, product development, analytical control and product manufacture, sales and distribution), hospital pharmacy, public health, Food & Drug Administration, toxicology, and research and teaching after further education. Pharmacy, especially hospital pharmacy, offers wonderful opportunities for women. These are but a few of the many opportunities that await registered pharmacists of the future.

Pre-Pharmacy

Admission Requirements

A student who qualifies for admission to Auburn University is eligible to enter the pre-pharmacy curriculum. He should possess a strong motivation to serve the public and his high school record should contain a number of credits in the sciences.

Two academic years of pre-pharmacy, which may be taken at any institution offering the prescribed courses, are required for admission to the professional curriculum. A grade point average of at least 1.00, "C", on a minimum of 90 quarter hours exclusive of military science and physical education courses must be obtained. A student who does not qualify for admission after completion of seven quarters in pre-pharmacy at Auburn University but who meets University continuation in residence requirements may continue to register in pre-pharmacy only by special permission of the Dean of Pharmacy.

A typical two year pre-pharmacy curriculum is outlined below.

Curriculum in Pre-Pharmacy (PPY)

FIRST YEAR

FIRST QUARTER

EH 101	English Comp. ....5	EH 102	English Comp. ....5
MH 121	College Math. ....5	MH 122	College Math. ....5
CH 103	Gen. Chemistry ....4	CH 104	Gen. Chemistry ....4
CH 103L	Gen. Chem. Lab. ..1	CH 104L	Gen. Chem. Lab. ..1
MS	Military Training ....1	MS	Military Training ....1
PE	Physical Education ..1	PE	Physical Education ..1

SECOND QUARTER

THIRD QUARTER

BY 205	Pharmaceutical Botany .....5
HY 107	U.S. History .....5
CH 105	Gen. Chemistry ....3
CH 105L	Gen. Chem. Lab. ..2
MS	Military Training ....1
PE	Physical Education ..1

SECOND YEAR

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
CH 204 Quant. Analysis	3	EC 200 Gen. Economics	5	PS 206 Intr. Physics	5
CH 204L Quant. Anal. Lab.	2	PS 205 Intr. Physics	5	EC 211 Intr. Accounting	5
PG 211 Gen. Psychology or		ZY 101 Gen. Zoology	5	ZY 102 Gen. Zoology	5
SY 201 Intr. to Sociology	5	MS Military Training	1	MS Military Training	1
SP 210 Public Speaking	3	PE Physical Education	1	PE Physical Education	1
MS Elective	3				
MS Military Training	1				
PE Physical Education	1				

Curriculum in Pharmacy (PY)*Admission Requirements*

Students are admitted to the Pharmacy Curriculum after completing two years of pre-pharmacy with a minimum overall grade point average of 1.00 and evidence of an aptitude in the sciences as judged by the Pharmacy Admissions Committee. Application should be made on the forms provided by the School of Pharmacy. Courses listed in pre-pharmacy or their equivalent must be completed before the expected date of admission. Applicants should be prepared to appear for an interview if requested.

Transfer students must submit applications to the Pharmacy Admissions Committee at least 30 days prior to the expected date of admission. Students on the Auburn campus should follow the schedule suggested by the pre-pharmacy adviser. Transfer students from Junior Colleges may receive no more than 103 quarter hours credit (equal to two years of pre-pharmacy) while students transferring from four-year institutions will receive no more than 123 quarter hours credit for work completed in a non-pharmacy curriculum.

Curriculum Options

At the beginning of the first professional year, students may choose either a professional option in preparation for general practice, including hospital pharmacy, or a scientific option in preparation for industry, medical school, research or teaching. The program of each student under either option must be approved by the adviser and those choosing the scientific option must have the approval of the Dean. Both options will adequately prepare students for State Board examinations. It is hoped that these options will motivate the superior student to achieve an educational level consistent with his ability and interests.

Electives should be chosen from the approved list available from the faculty adviser or Dean's office.

Students who are qualified and have the prerequisites may take up to 10 hours of graduate courses in their fifth year. Such work cannot be applied toward both the undergraduate and graduate degrees. Registration in graduate courses must be approved by the Dean of the Graduate School.

Attention is called to the following regulation of the American Council on Pharmaceutical Education: "No student may graduate from a recognized college or school of pharmacy who has spent less than three scholastic years of nine quarters or six semesters in residence at said school or college."

Pharmacy Continuation in Residence Requirements

A student who has received two academic suspensions will be dropped from the professional curriculum. He is eligible to apply for admission to another curriculum in accordance with University regulations. University regulations governing probation, clearing probation, and academic suspension are considered minimal for pharmacy students.

Scholarships and Loans. — Information concerning available scholarships and loans may be obtained by contacting the Director of Student Financial Aid, or the Dean, School of Pharmacy, Auburn University.

Pharmacy Extension Program. — A program of extension and continuing education for Alabama pharmacists now is in operation. The rapid advancements being made in the pharmaceutical sciences make it imperative to bring new knowledge and refresher courses to the pharmacist in or near his home. Meetings will be held throughout the year, enabling most Alabama pharmacists to avail themselves of this educational service. Faculty members of the School, as well as experts in industry and in state and federal governmental agencies, will serve as instructors.

Curriculum in Pharmacy (PY)

FIRST PROFESSIONAL YEAR*

FIRST QUARTER		SECOND QUARTER		THIRD QUARTER	
CH 207	Organic Chemistry ..5	CH 208	Organic Chemistry ..5	CH 301	Biochemistry*** ..5
PY 201	Inorg. Pharmaceutical Chemistry .....5	PY 306	Pharmacognosy I ..5	PY 203	Organic Pharmaceutical Chemistry ..5
PY 102	Pharmaceutical Mathematics .....5	VM 200	Gen. Microbiology ..5	VM 204	Pathogenic Microbiology .....5
PY 101	Intr. to Pharmacy ...3	PY 202	Pharmaceutical Terminology .....2	PY 204	Drug Marketing*** ..3
PY 100	Phar. Convocation** 0				

SECOND PROFESSIONAL YEAR

PY 301	Pharmaceutical Technology I .....5	EH 345	Business & Prof. Writing .....5	PY 304	Pharmaceutical Technology III ..5
PY 302	Organic Pharmaceutical Chemistry ..5	PY 303	Pharmaceutical Technology II ..5	PY 307	Pharmacognosy II*** ..5
PY 309	Pharmacology I .....5	PY 405	Pharmacology II ..5	PY 406	Pharmacology III ..5
	Elective .....3		Elective .....3		Elective .....3

THIRD PROFESSIONAL YEAR

PY 400	Disp. Pharmacy I ...5	PY 401	Disp. Pharmacy II ..5	PY 402	Dispensing Pharmacy III*** ..5
PY 408	Pharmaceutical Economics*** ..5	PY 404	Chemistry of Nat. Products .....5	PY 414	Pharmaceutical Specialties*** ..3
PY 407	Chemotherapeutic Drugs .....5		Prof. Elective .....5	PY 428	Public Health ..5
PY 415	Pharmaceutical Jurisprudence .....3				Elective .....2

Total—258 quarter hours

* Options may be chosen at the beginning of the First Professional Year. Advanced ROTC may be used as approved elective.

** Required of all Pharmacy students each quarter. Professional topics will be discussed by visiting lecturers, faculty and students.

*** With consent of the adviser and approval of the Dean, those electing the scientific option may substitute courses of equal credit for these subjects.

A list of approved general, professional and scientific electives may be obtained from the adviser or the Dean's office.

Notes: 1. Proficiency in typing required for admission to 5th year.

2. Students are expected to participate in field trips to a pharmaceutical manufacturing plant during their junior or senior year, and to a wholesale drug company during their senior year.

3. A set of Class C Metric and Apothecaries' weights, which may be purchased from Pharmacy Supply, are required for all Pharmacy laboratories.

APPROVED ELECTIVES**PROFESSIONAL OR SCIENTIFIC**

PY 205 History of Pharmacy	3
PY 300 Professional Accessories	3
PY 308 Hospital Pharmacy Administration ..	3
PY 403 Toxicology	5
PY 410 Advanced Pharmacy	5
PY 411 Elements of Pharmaceutical Mfg.	5
PY 412 Public & Professional Relations ..	3
PY 413 Special Problems	1-8
PY 421 Advanced Inorganic Pharm. Chem.	5
PY 429 Biochemical Pharmacology	3
PY 430 Pharmacological Techniques	5
PY 431 Cellular Pharmacology	5
PY 432 Fundamentals of Bionucleonics	3
PY 440 Histology of Natural Products	3
PY 441 Commercial Pharmacognosy	3
ZY 300 Genetics	5
CH 316 Physical Chemistry	5
CH 418-19-20 Biochemistry	5-5-5
HE 372 Nutrition & Health	3
ZY 301 Comparative Anatomy	5
ZY 302 Vertebrate Embryology	5
HPR 302 Alcohol, Narcotics, & Tobacco ..	3
MH 161-2 Anal. Geom. & Cal.	5-5
MH 263-4 Anal. Geom. & Cal.	5-5
EC 331 Principles of Marketing	5
EC 341 Business Law	5
EC 432 Advertising	5

GENERAL ELECTIVES

BY 101-102 General Botany	5-5
PS 217 Astronomy	3
EC 102 Principles of Geography	5
EC 212 Introductory Accounting	5
GL 342 Geology	5
EH 108 Classical Literature	5
EH 141 Medical Vocabulary	5
SP 211 Essentials of Public Speaking	5
EH 304 Technical Writing	5
EH 390 Advanced Composition	5
FL 121-122 Introductory French	5-5
FL 151-152 Introductory German	5-5
HY 206 American Government	5
HY 207-8 World History	5-5
MU 373 Appreciation of Music	3
MU 374 Masterpieces of Music	3
PA 301 Introduction to Philosophy	3
PA 302 Introduction to Ethics	3
PA 308 Introduction to Logic	3
PG 211 General Psychology	5
SY 201 Introduction to Sociology	5
PG 311 Behavior of Man	3
SA 113 Personal Typing	3

School of Veterinary Medicine

J. E. GREENE, Dean
NELSON KING, Assistant Dean

THE SCHOOL OF VETERINARY MEDICINE offers a fully accredited program of training leading to the degree of Doctor of Veterinary Medicine. The curriculum requires four years in the professional school after completion of at least two years of the pre-professional course.

Specific Information

Admission

Seven quarters of general college work, with a minimum honor point average of 1.25 on all courses attempted and on all required courses is required for admission. A grade of D on any required course will not be accepted. The Committee on Admissions of the School of Veterinary Medicine may require a personal interview with any applicant and may also require a reading comprehension test, or an examination on any required course. The School of Arts and Sciences offers a two-year Pre-Veterinary Medicine Curriculum which is available to residents of Alabama. Although farm experience is not a requirement for admission, applicants are urged to gain such experience. Students without farm knowledge frequently have difficulty with certain courses, particularly in the clinical areas. Applications for admission to the pre-veterinary course should be made directly to the Admissions Officer, Auburn University.

Residents of states other than Alabama should complete the pre-professional requirements at institutions within their home state, since they are not eligible for admission to the pre-professional curriculum at Auburn University. One hundred and twenty quarter hours pre-professional work is required for entrance into the professional curriculum. This 120 quarter hours must include 15 quarter hours of inorganic chemistry, 10 quarter hours of organic chemistry, 10 quarter hours of physics, 5 quarter hours of genetics, 10 quarter hours of zoology, 10 quarter hours of English, 10 quarter hours of college mathematics including calculus, 5 quarter hours of animal nutrition, 3 quarter hours of feeds and feeding, 10 quarter hours of history, and 3 quarter hours of medical vocabulary. Ten quarter hours of Latin or modern language may be substituted for medical vocabulary, or this course may be taken through the Correspondence Study Department, Auburn University. Three semester-hour courses will be accepted as the equivalent in subject-matter content of five-quarter-hour courses.

Admission to the School of Veterinary Medicine must be gained through formal application not later than February 15 preceding the Fall Quarter in which admission is desired. Preliminary consideration for admission will be based on academic work completed prior to February 15. Final consideration will be based on academic work completed prior to June 15.

Applicants Should Submit the Following

1. Two completed applications for admission on form supplied by Auburn University. All applications must be submitted to the Dean, School of Veteri-

nary Medicine, through proper channels by February 15 preceding admission date. (Only one transcript is required of students formerly enrolled at Auburn University.)

2. Two official transcripts from each college or university attended.

3. A list of courses in progress at time of application, if any.

4. Letters of recommendation from three persons vouching for character, integrity and general qualifications.

Those applicants who have not completed all requirements for admission at the time of application must submit by July 1 two supplemental official transcripts of any work completed after application is filed.

If a student is admitted to the School of Veterinary Medicine, he must submit in addition to the above, one completed physical examination report on a form supplied by Auburn University at least three weeks prior to date of registration (not required by students formerly enrolled at Auburn University), and an application processing fee.

The final selection of students is made by the Committee on Admissions of the School of Veterinary Medicine, Auburn University. These selections are made from the applicants who have been certified by the committees in the respective states after giving due consideration to scholastic record and general adaptability for the profession. The right is reserved to accept or reject any applicant. All applications for admission must be on file at the School of Veterinary Medicine by February 15 preceding date of admission.

Microscopes. — In order to be admitted to the School of Veterinary Medicine, students must own a compound microscope acceptable to the faculty. Students must furnish a microscope in all courses requiring the use of this instrument. Microscopes may be purchased through the Book Store of Auburn University.

Admission under the Regional Plan. — Under the Regional Plan for Veterinary Training, the School of Veterinary Medicine serves six states — Alabama, Florida, Kentucky, Louisiana, Mississippi and Tennessee. While there is no limit on the number of applications, the School's facilities make it necessary to restrict admissions.

The Land-Grant Institution in each state participating under the Southern Regional Education plan maintains a counseling and guidance service for students desiring admission to the School of Veterinary Medicine. Students attending other than Land-Grant Institutions of the several states should contact the counseling and guidance service for information and advice concerning courses which will be acceptable in the pre-veterinary curriculum. Inquiries should be made early and addressed to:

Alabama: Dean, School of Arts and Sciences
 Auburn University
 Auburn, Alabama

Florida: Dean, College of Agriculture
 University of Florida
 Gainesville, Florida

Kentucky: Associate Dean, School of Agriculture and Home Economics
 University of Kentucky
 Lexington, Kentucky

Louisiana:	Head, Department of Veterinary Science Louisiana State University Baton Rouge, Louisiana
Mississippi:	Dean, School of Agriculture Mississippi State University State College, Mississippi
Tennessee:	Dean of Resident Instruction College of Agriculture University of Tennessee Knoxville, Tennessee

The procedure for making application for admission to the School of Veterinary Medicine under the Regional Plan varies in the several states. An officer, or board, in each state certifies applicants as to residence and evaluates the courses completed. Courses acceptable in the degree program at the State Land-Grant Institution will be considered acceptable in the Auburn University pre-veterinary program. An applicant who wishes to be included in his state's list of eligibles for entrance into the School of Veterinary Medicine should send his completed application together with three letters of recommendation and transcripts covering all college work completed to the appropriate address as indicated below:

Alabama:	Dean, School of Veterinary Medicine Auburn University Auburn, Alabama
Florida:	Secretary Board of Control for Fla. Institutions of Higher Learning Tallahassee, Florida
Kentucky:	Chairman, Committee on Regional Veterinary Training University of Kentucky Lexington, Kentucky
Louisiana:	Chairman, Certification Committee Louisiana State University Baton Rouge, Louisiana
Mississippi:	Executive Secretary Board of Trustees for Institutions of Higher Learning State Capitol Jackson, Mississippi
Tennessee:	Committee on Regional Veterinary Training University of Tennessee Knoxville, Tennessee

Scholastic Requirements

Students enrolled in the School of Veterinary Medicine who fail to make a grade point average of 1.25 in any quarter will be placed on academic probation. Students on academic probation who fail to make a 1.25 in the

following quarter may be dropped from the School of Veterinary Medicine. Students who make a grade of F on any course may be required to withdraw from the School of Veterinary Medicine. If readmitted such students may be required to repeat certain other courses in the curriculum for that quarter.

Students who are dropped under the above provisions are eligible for admission to other curricula provided they meet the University scholastic requirements for continuation in residence. The scholastic penalties incurred while enrolled in the School of Veterinary Medicine will become a part of the student's record.

Curriculum in Veterinary Medicine (VM)

FIRST QUARTER		FIRST YEAR		THIRD QUARTER	
		SECOND QUARTER		SECOND YEAR	
VM 320 Anatomy I	5	VM 321 Anatomy II	5	VM 322 Anatomy III	5
VM 326 Histology	5	VM 327 Organology	5	VM 328 Embryology	5
VM 330 Vet. Micro. I	5	VM 331 Vet. Micro. II	5	VM 336 Physiology IV	5
VM 318 Physiology I	3	VM 329 Physiology II	3	VM 332 Physiology III	3
THIRD YEAR					
PH 422 Avian Disease	5	VM 501 Vet. Medicine II	5	VM 504 Vet. Surgery II	5
VM 500 Vet. Medicine I	5	VM 523 Veterinary Public Health I	5	VM 512 Vet. Surgery III	5
VM 510 Vet. Medicine IV	5	VM 503 Vet. Surgery I	3	VM 502 Vet. Medicine III	3
VM 534 Lab. Animal Medicine	3	VM 530 Vet. Radiology	3	VM 519 Vet. Medicine V	3
VM 526 Clinics I	2	VM 527 Clinics II	2	VM 550 Vet. Obstetrics II	2
VM 525 Jurisp. & Ethics	1	VM 540 Vet. Obstetrics I	2	VM 508 Clinics III	1
FOURTH YEAR					
VM 554 Vet. Medicine VI	5	VM 555 Vet. Medicine VII	5	VM 556 Vet. Medicine VIII	5
VM 569 Veterinary Public Health II	5	VM 559 Vet. Medicine IX	3	VM 588 Vet. Medicine XI	5
VM 542 Applied Anatomy	3	VM 561 Vet. Medicine X	3	VM 568 Clinics IX	3
VM 560 Vet. Obstetrics III	3	VM 567 Clinics VII	3	VM 582 Seminar	3
VM 566 Clinics V	3	VM 564 Clinics VIII	2	VM 565 Clinics X	2
VM 563 Clinics VI	2	VM 552 Juris. & Ethics	1	VM 574 Vet. Surgery VI	1
VM 572 Vet. Surgery IV	1	VM 573 Vet. Surgery V	1		

Total—230 quarter hours

Graduate

All departments offer programs through the Graduate School leading to a Master of Science degree. Master's degree candidates may be required to pass a preliminary oral and/or written examination to demonstrate adequate knowledge in their chosen fields. A doctoral program leading to a Doctor of Philosophy is offered in Physiology. This is an interdisciplinary program that offers sufficient flexibility to permit students to adapt programs to their individual needs.

Extension

Under the direction of the Vice President for Extension this school provides continuing education programs throughout the year in Auburn and at off-campus sites.

The Graduate School

W. V. PARKER, *Dean*

H. H. FUNDERBURK, JR., *Assistant Dean*

ALL REGULATIONS governing the Graduate School are designed to equal or exceed the minimum standards recommended by the Commission on Colleges and Universities of the Southern Association of Colleges and Secondary Schools.

A student with a bachelor's degree from an accredited college or university may apply to the Dean of the Graduate School for admission. Application forms for admission may be secured from the Graduate School and must be received at least three weeks before registration. A transcript of undergraduate credits and satisfactory scores on the Aptitude Test of the Graduate Record Examinations must also be submitted. Every applicant must have a satisfactory undergraduate record and show adequate preparation in the field in which he desires to major as determined by the screening committee of the school or department concerned.

The Graduate School bulletin should be consulted for detailed information on the regulations of the Graduate School, the courses offered for graduate credit, the requirements for degrees, fellowships and assistantships, and other matters pertaining to graduate work in this institution. Undergraduates wishing to register for graduate courses should consult this bulletin for regulations concerning such registration. A bulletin may be obtained upon request from the Dean of the Graduate School.

The Graduate School administers graduate work leading to the degrees listed below.

Graduate Degrees

The Master's Program

Master of Science in the areas of Aerospace Engineering, Agricultural Economics, Agricultural Engineering, Agronomy, Animal Science, Animal Nutrition, Botany, Business Administration, Chemical Engineering, Chemistry, Civil Engineering, Dairy Manufacturing, Dairy Production, Economics, Education, Electrical Engineering, Entomology, Fisheries Management, Forestry, Home Economics, Horticulture, Industrial Engineering, Mathematics, Mechanical Engineering, Nuclear Science, Ornamental Horticulture, Pharmacy, Physics, Poultry Science, Psychology, Radiological Sciences, Toxicology, Veterinary Medicine, Wildlife Management, and Zoology.

Master of Arts in the areas of English, History, and Speech.

Other Master's Degrees: Master of Agriculture, Master of Fine Arts, Master of Building Construction, Master of Business Administration, Master of Education, Master of Home Economics, Master of Arts in College Teaching.

The Specialist in Education Program

Specialist in Education in the areas of Curriculum, Teaching, Administration, Supervision, and Guidance.

The Doctoral Degree Program

Doctor of Education in the areas of School Administration, Supervision and Guidance; and Curriculum and Teaching.

Doctor of Philosophy in the Departments of Agronomy and Soils, Animal Science, Botany and Plant Pathology, Chemistry, Electrical Engineering, English, Forestry, History, Mathematics, Mechanical Engineering, Physics, Psychology, Poultry Science, and Zoology-Entomology, and interdisciplinary programs in Agricultural Engineering, and Physiology.

Research Program with the Oak Ridge Associated Universities

Auburn University is one of the sponsoring institutions of the Oak Ridge Associated Universities research program located at Oak Ridge, Tennessee. Through this cooperative association our graduate research programs have at their disposal the facilities of the National Laboratories in Oak Ridge and the research staffs of these laboratories. When advanced degree candidates in certain areas have completed their residence work at Auburn it is possible, by special arrangement, for them to go to Oak Ridge to do their research problems and prepare their theses. In addition, it is possible for our faculty members to obtain appointments on the Oak Ridge Research Participation Program for varying periods, usually not less than three months, in order to pursue advanced studies in their fields of specialization. Thus, both faculty and students may keep abreast of the most modern and up-to-date developments in atomic and nuclear research that is in progress at the Oak Ridge Laboratories.

The students will go to Oak Ridge on Oak Ridge Graduate Fellowships. The stipend will be determined by the number of dependents of the student and by the level of work which he is prepared to do. Faculty members may work in Oak Ridge on stipends commensurate with their current college salary and rank.

Information on the opportunities for research in the Oak Ridge Laboratories is available in the office of the Dean of the Graduate School.

Nuclear Science Center

WARREN ANDREWS, *Director*

The Nuclear Science Center was completed in 1967. This facility provides research and teaching space for use by all departments for work in all phases of the pure and applied aspects of the nuclear science field. Work is being done in the areas of agriculture, chemistry, engineering, home economics, pharmacy, physics and veterinary medicine.

Auburn Computer Center

LELAND H. WILLIAMS, *Director*

The Auburn Computer Center, which is presently equipped with an open-shop IBM 1620 and a closed-shop IBM 7040/1401, is administered by the Graduate School. Computer time is available freely for research, instructional, extension, or administrative projects with the endorsement of any University department. However, all researchers are encouraged to obtain external funds to support computer time and associated costs required for their work. Details concerning arrangements for the use of computer services are available in most departments but can also be obtained from the Director of the Computer Center.

Reserve Officers Training Corps

Department of Military Science

COLONEL ROBERT B. MARSHALL
Commandant and Professor of Military Science

STUDY OF MILITARY SCIENCE at Auburn University dates back to the Civil War period. The Morrill Land Grant Act of 1862 requires that military instruction be furnished to students. Instruction in Military Science is under the supervision of an officer of the Active Army who is detailed as Professor of Military Science. By appointment of the college authorities he is Commandant of the ROTC students. The Professor of Military Science is assisted by a staff of commissioned and non-commissioned officers of the Army. The curriculum in Military Science is divided into two courses, basic and advanced. A description of course requirements is discussed in the following paragraphs.

Basic Course

The basic course consists of a six-quarter block of instruction normally taken during the freshman and sophomore years. During the freshman year classroom instruction is taken all in one quarter, three hours per week, accompanied by two hours of drill per week. This course is given in the Fall, Winter, and Spring Quarters, and one credit hour is allowed. In the quarters wherein classroom instruction is not received, the student attends drill two hours per week, and for each quarter successfully completed, one credit hour may be earned.

In the sophomore year four hours of instruction (two classroom and two drill) are taken each week in three quarters, with one credit hour allowed per quarter.

Basic Camp

The basic camp consists of six weeks of field training conducted at an Army Post during the summer. Basic camp is not required for students completing the basic course described above. It is designed for transfer students who wish to substitute the successful completion of the basic camp for the six-quarters resident basic course and enroll in the advanced course. Transfer students may apply to the Professor of Military Science for deferment from their remaining basic ROTC requirement and enter into an agreement to complete basic camp and the advanced course. While attending basic camp students are paid at the rate of \$90.60 per month. Reimbursement to the student for travel expenses is made at a rate of six cents per mile to and from camp. Uniforms, quarters, medical care and rations are furnished by the government during the camp period.

Advanced Course

The Advanced Course is designed to produce officers for the Army of the United States, both the Active Army and the Reserve. Admission to the Ad-

vanced Course is on a best qualified basis. Because the number of applications received usually exceeds the quota allotted to this unit, possession of minimum qualifications does not insure selection. Successful completion of the Advanced Course at Auburn University qualifies the student for a commission as 2nd Lieutenant in one of the following branches of the USAR: Adjutant General's Corps, Armor, Military Intelligence, Artillery and Air Defense, Chemical Corps, Corps of Engineers, Finance Corps, Infantry, Medical Service Corps, Military Police Corps, Ordnance Corps, Quartermaster Corps, Signal Corps, and Transportation Corps, based on student's choice and needs of the Army. Students who are designated Distinguished Military Students may apply for a Regular Army commission, if accomplished prior to graduation and designation as a Distinguished Military Graduate. The advanced course consists of a six-quarter course, normally taken during the junior and senior years, designed to qualify the student for appointment in any of the aforementioned branches. Three credit hours are allowed for each quarter of the advanced course. For limitation on credit allowed toward meeting degree requirements, see engineering curricula. Students are paid subsistence pay of \$50.00 per month, not to exceed 20 months, while enrolled in the Advanced Course.

An advanced camp of six weeks duration must be attended by the student before he becomes eligible for a commission. Advanced camp is normally attended during the summer between the end of the junior and the start of the senior years. While attending advanced camp students are paid \$151.95 per month. Reimbursement to the students for travel expenses is made at a rate of six cents per mile to and from camp. Uniforms, quarters, medical care and rations are furnished by the government during the camp period. The applicant for the advanced course must:

1. Be a citizen of the United States.
2. Be physically qualified in accordance with standards prescribed by the Department of the Army.
3. Not have reached 28 years of age at time of appointment in the U.S. Army Reserve.
4. Have completed appropriate basic training (2 years basic course or basic camp) or have equivalent military or ROTC training in lieu thereof; have at least two (2) academic years to complete prior to graduation.
5. Have minimum overall academic average of 1.0.
6. Be selected by the Professor of Military Science and the President of Auburn University.
7. Enlist as a cadet in the U.S. Army Reserve.
8. Execute a written agreement with the Government to complete the two-year Advanced Course training and attend one Summer Camp (six weeks duration) preferably at the end of the first year of the Advanced Course. Agree in writing to accept an appointment as a commissioned officer in the Army Reserve and serve the prescribed period of duty.

Financial Assistance Program

The Army ROTC offers a scholarship program designed to provide financial assistance to outstanding young men in the program who are interested in the Army as a career. Each scholarship provides for free tuition, textbooks and laboratory fees in addition to pay of \$50 per month for the period that the scholarship is in effect. During a six-week summer training period, normally at the end of the junior year, this pay is increased to one-half of a

second lieutenant's base pay. The scholarships are provided under provisions of Public Law 88-647, The ROTC Vitalization Act of 1964.

Scholarships may be awarded for either two or four years. Four-year scholarships are open to all students entering Army ROTC as freshmen, while the two-year scholarships are restricted to those students who have completed the first two years of ROTC and are selected by the Professor of Military Science for enrollment in the ROTC Advanced Course. To receive a four-year scholarship, students must apply while in high school.

Recipients of Army ROTC scholarships are required to serve six years in the Army, at least four years of which must be on active duty unless released earlier by the Secretary of the Army. Any of the six year period remaining after release from active duty must be spent in a reserve status.

Army ROTC Aviation Program

Qualified second year advanced (MS IV) cadets may apply for enrollment in the Army ROTC Flight Training Program, subject to quota limitations. This program is conducted at no expense to the student. Participation in the program will not act to cause any reduction in the prescribed MS IV course. This course is an approved Federal Aviation Agency standardized flight instruction program consisting of 35 hours ground instruction and 36½ hours flight training. Satisfactory completion of the program of instruction will qualify the graduates for award of a FAA Private Pilot's certificate. Students must agree to a period of active duty for three years after completion of additional flight training in the active service.

Uniforms and Equipment

All students, both Basic and Advanced, are required to deposit the sum of \$30.00 with the Bursar of the University, prior to enrollment in ROTC. They are then furnished a uniform in good condition and other necessary supplies through the ROTC Supply Office. Upon completion of the ROTC course of instruction, or upon withdrawal of the student therefrom, the uniform and other supplies are turned in and the deposit returned to the student, less \$1.50 per quarter withheld by the Bursar of the University to cover the cost of cleaning and repair of uniforms, when applicable and to support ROTC activities as follows: Scholarship and marksmanship awards; special apparel and equipment for competitive drill teams and rifle teams; approved travel for drill teams and ROTC honoraries representing Auburn University and rifle teams representing Auburn University ROTC; uniforms for sponsors; the official Military Ball in an amount not to exceed \$.40 per cadet enrolled that quarter.

Distinguished Military Students

The Professor of Military Science may designate as a Distinguished Military Student a person who:

1. Possesses outstanding qualities of leadership, high moral character, and definite aptitude for the military service.
2. Has attained an academic standing in the upper half of his class. An exception may be made only in the case of an individual student whose

standing is in the upper 10 per cent of his class in military subjects, or who has shown exceptionally high motivation toward a military career.

3. Has demonstrated his leadership ability through his achievements while participating in recognized campus activities.

4. Has attained a class standing in the upper third of his ROTC class in the Advanced Course, Senior Division, ROTC.

Distinguished Military Students may make application for a commission in the Regular Army any time subsequent to such designation, but not later than the date on which they are designated Distinguished Military Graduates. If accepted they will be commissioned in the Regular Army upon graduation.

Distinguished Military Graduates

The Professor of Military Science may designate as a Distinguished Military Graduate a person who was designated a Distinguished Military Student and who has maintained the high academic standards between the time of such designation and date of commission and graduation.

Selective Service Deferments

Students enrolled in the advanced course, Army ROTC, will be deferred under the provisions of the Universal Military Training and Service Act, as amended, according to the following:

1. The students are required to sign an ROTC deferment agreement. The provisions of the agreement require the students to complete the advanced course and to accept commissions if tendered by the Department of the Army.

2. The Professor of Military Science will notify the local selective service boards of all enrolled students of their selection for deferment. Deferment by the local selective service board is mandatory unless the student has received an order to report for induction.

Students enrolled in the basic course, Army ROTC, may request the Professor of Military Science to select them for deferment. The students are required to sign an ROTC deferment agreement. The provisions of the agreement require the students to complete the basic and advanced courses and accept commissions if tendered by the Department of the Army.

Deferred students dropped from ROTC, not in good scholastic standing, or not considered potential commissioned officers, will no longer be deferred. Students who decline to fulfill the terms of their ROTC deferment agreements pertaining to undergraduate work at the institution will be reported to Selective Service.

Department of Naval Science

CAPTAIN J. B. SWEENEY, JR., USN
Commanding Officer and Professor of Naval Science

THE NAVAL RESERVE Officers Training Corps is established under authority of Title 10, U.S. Code, as amended.

A Captain in the Navy or a Colonel in the Marine Corps is assigned as the Professor of Naval Science. He is assisted by commissioned officers and others detailed from the Navy and Marine Corps.

The purpose of NROTC is to provide a steady supply of well-educated junior officers for the line and staff corps of the Regular Navy and to build up a reserve of trained officers who will be ready to serve their country at a moment's notice in a national emergency. NROTC graduates are given equal rank, equal treatment, and equal opportunities with the graduates of the United States Naval Academy.

Types of NROTC Students

Students in the NROTC are of four types:

1. Regular NROTC Students are appointed Midshipman, USNR. Such students assume an obligation to make all required summer practice cruises and upon acceptance of an appointment as a commissioned officer in the U.S. Navy or U.S. Marine Corps serve at the pleasure of the President. The Secretary of the Navy establishes criteria for voluntary termination of an officer's status to meet the needs of the naval service. At the present time the required minimum active duty service period of four years has been established by the Secretary of the Navy.

The Regular program briefly described above is one of the most remarkable educational opportunities ever offered. Public Law 729 (as amended by Public Law 88-647), signed by the President on 13 August 1946, instituted the selection and training of officer candidates for the Navy and Marine Corps in colleges and universities throughout the country.

For the Regular student the cost of tuition, fees, and textbooks will be paid by the Government. Necessary uniforms will be provided by the Government and students will receive subsistence pay for other expenses during college at the rate of \$50 per month. Active duty pay while on summer training is based on rate of pay for midshipmen of the Naval Academy (\$151.95 per month at present). Normally students will attend college for four years. While in college they may take any course leading to a bachelaureate or higher degree except the following:

Agronomy	Horticulture	Pre-medicine
Animal Science	Hotel Administration	Pre-theology
Art	Industrial Arts	Pre-veterinary
Dairy Manufacturing	Landscape Architecture	Real Estate
Dairy Production	Law	Religion
Dairy Science	Medicine	Soil Conservation
Dentistry	Music	Soils
Dramatics	Pharmacy	Theology
Entomology	Physical Education	Veterinary Medicine
Floriculture	Poultry Science	Wildlife Management
General Agriculture	Pre-dentistry	

In addition to the requirements of their major, Regular NROTC students are required to take 33 quarter hours of Naval Science and complete one year of college mathematics and one year of physics by the end of their sophomore year. In those instances where a Regular NROTC student has received credit at the university for one year of college mathematics, such credit having been established by means of advanced placement tests, the Chief of Naval Personnel will consider that the mathematics requirement has been met. The same type of consideration may be applied to the physics requirement of the Regular NROTC student. Also, in order to strengthen the courses in Principles and Problems of Leadership (NS 412 and NS 413), a minimum of 3 hours in Psychology is required as a prerequisite. Toward meeting this requirement,

PG 311 - Behavior of Man, 3 hours, will be scheduled as an additional requirement for all NROTC students to qualify for a commission and must be completed not later than the end of their junior year. An exception to this rule will be made in the case of NROTC students whose curriculum requires PG 211 - General Psychology, and completion of this course will be considered as meeting requirements as stated above. Where a curriculum requires a course in Psychology other than PG 211 or 311, requests may be made to the Professor of Naval Science for substitution.

They will be required to make two summer cruises and take one summer period of aviation-amphibious indoctrination, lasting from six to eight weeks each, and upon graduation must accept a commission as Ensign, USN, or Second Lieutenant, USMC, if offered. If at the end of four years they do not wish to remain in the regular Navy or Marine Corps, and, in the event of the termination of their commission, they must accept a commission as a Reserve Officer in the United States Navy or the United States Marine Corps, if offered.

Entrance to this Regular program described above is effected through the medium of nation-wide competitive examination given by the Naval Examining Section during December of each year for selection of NROTC students to enter the Regular program for the following Fall. Application blanks to take the examination and information bulletins describing this program are made available each Fall at all high schools, colleges, and Offices of Naval Officer Procurement. For more complete details, contact the Professor of Naval Science of this university.

2. Contract NROTC students have the status of civilians who have entered into a mutual contract with the Navy. They are not entitled to the compensation or benefits paid Regular NROTC students except that they are entitled to a uniform issue, Naval Science textbooks, subsistence pay during their final two years of NROTC training, and practice cruise compensation. Contract NROTC students, if in all respects qualified, are commissioned as Reserve Officers in the United States Navy or Marine Corps upon successful completion of the course. They are required to serve on active duty for a period of three years and retain their commission for a total of six years, unless sooner released by the Secretary of the Navy. Contract students commissioned in the United States Marine Corps may receive commissions as Regular Officers, if accepted under current quotas, and will have the same options of service that Regular NROTC students have.

While in the university, a Contract student may take any curriculum which leads to a baccalaureate or higher degree. This does not, however, entitle the student to any delay or active duty requirements after attaining the basic requirements for a baccalaureate degree and commissioning. In addition to the requirements of their major and 33 quarter hours of Naval Science, Contract students must complete satisfactorily by the end of their second year in the program one of the following requirements: (a) Mathematics through trigonometry (in secondary school or college); or (b) One quarter of college mathematics. If a Contract NROTC student has received credit at the university for one quarter of college mathematics, the Chief of Naval Personnel will consider that the mathematics requirement has been met. Contract NROTC students must also meet the same requirement of Psychology as indicated above for Regular NROTC students. Contract students are required to make only one cruise, normally between the junior and senior years. During this training period, Contract students will be paid at the same rate as Regular students.

During their junior and senior years in the NROTC program, Contract

students receive subsistence pay of \$50 per month provided they fulfill the following requirement:

Enlist in the U.S. Naval Reserve (inactive) for the standard six-year reserve obligation. Those students already serving under a reserve enlistment contract will be discharged and re-enlisted under provisions of Section 2104 of Title 10 U.S. Code.

The Reserve Officers Training Corps Vitalization Act of 1964 states that though in an enlisted status during the years enrolled in the advanced Contract program, this time cannot be computed for length of service for a commissioned officer.

Advanced course students who are disenrolled from the program for reasons beyond their control or who, without willfully violating the terms of their contract, are disenrolled from the program, will be discharged from their reserve status at the same time, unless they request active duty or retention in the Naval Reserve.

Contract NROTC students are selected by the Professor of Naval Science prior to the beginning of the Fall Quarter.

3. Two-Year Advanced Course Contract students are eligible to receive all benefits, and are subject to the same conditions of service, as the four-year Contract student who has reached junior status. They must meet the academic and physical requirements of the four-year Contract program, except waivers are granted for visual acuity which falls below 20/40, depending on the option selected. Applications must be received by March 15th of the sophomore year. If selected, applicants will attend a six-week summer training program prior to enrollment in the junior year.
4. Naval Science Students: With the approval of the academic authorities, and with certain exceptions, students disenrolled from the Regular or Contract NROTC programs may be permitted to pursue Naval Science courses for the purpose of fulfilling the university's requirement of six quarters of ROTC. They are not eligible to make NROTC cruises nor to be paid compensation or benefits.

General Qualifications for Enrollment

In general, each candidate for enrollment in the NROTC must meet the following requirements:

1. A Regular NROTC student must be an unmarried male citizen of the United States, never have been married, and agree to remain unmarried until commissioned or disenrolled. (Contract NROTC students may be married.)
2. Have attained his 17th birthday on or before July first of the year of enrollment and be of such age that he will not have attained his 25th birthday before July first of the year he will be commissioned. The Professor of Naval Science is authorized to waive the minimum age requirement for Contract students of the freshman class in those cases where he considers the student of sufficient maturity to undertake the Naval Science courses and drills.

3. Be morally qualified and possess officer qualifications and character as evidenced by appearance, scholarship, extracurricular activities, and record in his home community.

4. Be at least a high school graduate or person of equivalent educational level if selected competitively; or be enrolled in good standing and attending an NROTC institution if selected by the Professor of Naval Science.

5. Be physically qualified in accordance with the current manual of the Medical Department requirements for entrance into the Naval Academy.

Equipment

Uniforms, Naval Science textbooks, and other equipment necessary to the Navy program will be furnished by the government to Regular and Contract students. The uniform will be worn only when students are engaged in drills or other naval activities prescribed by the Professor of Naval Science.

Selective Service Deferment. 1. Regular and Contract students are draft deferred under the Selective Service Extension Act of 1951 from the time of executing their oath of office or contract. However, all males are required by law to register with their local draft board upon reaching age 18.

2. NROTC students dropped from the program become eligible for the draft upon separation from the NROTC. Regular students and Advanced-Course Contract students will be discharged from their enlisted status unless they request active duty or retention in the Naval Reserve.

3. The Department of Naval Science will keep the appropriate local draft board informed as to the status of each student under paragraphs 1 and 2 above.

Curriculum. The Naval Science curriculum consists of five hours per week for all courses with exception of the sophomore courses which consist of four hours per week. Two hours each week are spent on practical work or drill. The remaining hours per week are spent in classroom work. The Naval Science subjects carried during the four-year curriculum are listed below.

FIRST YEAR

1st Qtr. Naval Orientation (NS 111)
2nd Qtr. Sea Power (NS 112)
3rd Qtr. Sea Power (NS 113)

SECOND YEAR

1st Qtr. Naval Weapons (NS 211)
2nd Qtr. Naval Weapons (NS 212)
3rd Qtr. Naval Weapons (NS 213)

(U. S. N. Candidates)

THIRD YEAR

1st Qtr. Navigation (NS 311)
2nd Qtr. Navigation and Introduction to Naval Operations (NS 312)
3rd Qtr. Naval Operations (NS 313)

FOURTH YEAR

1st Qtr. Naval Engineering (NS 411)
2nd Qtr. Naval Engineering and Introduction to Principles and Problems of Leadership (NS 412)
3rd Qtr. Principles and Problems of Leadership (NS 413)

(U. S. M. C. Candidates)

THIRD YEAR

1st Qtr. Evolution of the Art of War (NS 321)
2nd Qtr. Evolution of the Art of War (NS 322)
3rd Qtr. Modern Basic Strategy and Tactics (NS 323)

FOURTH YEAR

1st Qtr. Amphibious Warfare Part I (NS 421)
2nd Qtr. Amphibious Warfare Part II (NS 422)
3rd Qtr. Leadership, The Uniform Code of Military Justice (NS 423)

Each of the above subjects carries 3 quarter hours of credit, with the exception of the sophomore courses which carry 2 quarter hours of credit. These hours of credit will be considered as a part of the normal quarterly load required for NROTC students. Graduation requirements may be increased, depending upon curriculum.

Flight and Ground Instruction. A program of flight and ground instruction is offered eligible NROTC students who have completed their sophomore year. This training may enable students to become eligible for a private

pilot's license. Flight training under the program is at Government expense and is in addition to the presently prescribed Naval Science curriculum for NROTC students.

Distinguished NROTC Graduates. The Professor of Naval Science may designate as a Distinguished NROTC Graduate any candidate who possesses outstanding qualities of leadership, high moral character, a definite aptitude for the naval service, and who has distinguished himself in his chosen academic major.

In order to qualify for this designation, a candidate must achieve an academic standing in his major field equivalent to "graduation with honor" (grade point average of 2.4 or better) and must also achieve an equivalent standing in aptitude and Naval Science subjects.

Department of Air Force Aerospace Studies (AFROTC)

COLONEL RITCHIE P. STIMPSON

Commandant and Professor of Air Force Aerospace Studies

THE AIR FORCE ROTC was established at Auburn University in the fall of 1946 as the School of Air Science and Tactics. As a result of the ROTC Vitalization Act of 1964, H.R. 9124, the curriculum was revised and the departmental title changed to the School of Air Force Aerospace Studies. During the Fall Quarter, 1967, the title was re-designated Department of Air Force Aerospace Studies. The officer education program under the new legislation is a new program designed to provide education that will develop skills and attitudes vital to the professional Air Force Officer. It is designed to qualify for commission those college men who desire to serve in the United States Air Force.

The curriculum in Air Force Aerospace Studies is divided into two courses, the General Military Course (Basic) and the Professional Officer Course (Advanced). For transfer students there is an off-campus program as a substitute for the basic course. A description of these courses, requirements for entrance, etc. are listed below.

Financial Assistance Program

Certain outstanding students may be selected by the Professor of Aerospace Studies to receive scholarships under the Financial Assistance Program. For these students, the Government will pay for the cost of tuition, fees, and textbooks. Necessary uniforms will be provided by the Government and students will receive retainer pay at the rate of \$600 per year. Only members of the four year on-campus program are eligible for the Financial Assistance Program.

General Military Course (Basic Course)

The Air Force course of study normally pursued by the student during his freshman and sophomore academic years is the General Military Course Program. One credit hour is allowed for each quarter of the two-year basic course successfully completed. Corps Training (drill) is scheduled each Tuesday and Thursday from 1:10 to 2:00 p.m.

In the freshman and sophomore years, classroom activity of one hour per week plus one hour of drill is required. Six quarters of classroom activity and six quarters of drill must be successfully completed to satisfy the university's military requirement.

Field Training Course

Since the General Military Course, or its equivalent, is a requirement for admission to the Professional Officer Education Program, provision has been made for off-campus training for transfer students who were unable to complete the basic course. These students, after application and acceptance, attend a Field Training Course at an Air Force Base for six weeks during the summer prior to their junior year. This course is an intensified military training program, with classroom work to cover the same material contained in the basic course. At the summer camp, these students are paid approximately \$120 monthly plus travel pay to and from camps. Uniforms, quarters, and rations are furnished by the Government during the training period. Upon successful completion of this course, students are eligible for the Advanced Course.

Professional Officer Course (Advanced Course)

The Professional Officer Course is designed to provide highly qualified junior officers for the United States Air Force. Enrollment in the program is based upon such factors as leadership, qualification and desire for flying training, academic major, scholastic achievement, and physical qualifications. Successful completion of the course qualifies the student for consideration for appointment as a Second Lieutenant in the USAF.

The program consists of a six-quarter course, normally taken during the junior and senior years. Three credit hours are allowed each quarter. For limitation on credit allowed toward meeting engineering degree requirements, see engineering curricula. Four hours of instruction are taken per week, three classroom periods and one drill period. Students are paid \$50.00 per month while enrolled in the program.

A student selected for enrollment in Category I-P (Pilot) will be given 36½ hours of actual flying and 35 hours of ground instruction, which may qualify him for a private flying certificate.

A summer field training period of four weeks duration must be attended by the advanced student if he has not successfully completed a six-week Field Training Encampment prior to entering the Professional Officers Course (POC). (See Paragraph 10 below). Summer training is normally accomplished during the summer between the junior and senior years. Uniforms, quarters, and rations are furnished by the government during the training period as well as travel expenses to and from camp. Cadets are paid approximately \$120 per month while attending the summer training unit.

Requirements for admission to the Professional Officer Course are as follows:

1. Be a United States citizen.

2. Be physically qualified in accordance with standards prescribed by the Department of the Air Force.

3. Be under 28 years of age at time of graduation and completion of the Advanced Course.

4. Students desiring to qualify for an Aeronautical rating in the USAF must not have reached 26½ years of age at time of graduation and completion of the Advanced Course, and must accept an appointment to an Air Force Flight Training School.

5. Usually have two academic years to complete for graduation.

6. Have an academic average of 1.0 or higher.

7. Be selected by the Professor of Aerospace Studies.

8. Must execute a written agreement to complete the two year Advanced Course training and to attend one summer training session (four weeks). Upon completion of the advanced course must accept an appointment in the Air Force in the grade of Second Lieutenant, if tendered, and must agree to serve on active duty as a commissioned officer with the United States Air Force, for not less than four years, in the case of Category II (Scientific and Engineering) and Category III (General) cadets and not less than six years, in the case of Category I-P (Pilot) and Category I-N (Navigator). (Veterans are exempt from this active duty requirement.)

9. Must enlist in the Air Force Reserve for a period of not less than six years (eight years for students in the Financial Assistance Program).

10. Have completed six quarters of basic training or a six-week Field Training Encampment, or have equivalent credit in lieu thereof, and have attained qualifying scores on Air Force Officer Qualifying Tests.

11. Veterans who desire to enroll in the Advanced Course on the basis of previous honorable active U.S. military service must request a waiver of the Basic Course, or portion thereof as a requirement for entrance. If a student meets all other requirements, he will be enrolled at the beginning of his junior year.

Uniforms and Equipment

All students are required to deposit \$30.00 with the Bursar of the University prior to enrollment in the AFROTC. They are furnished a uniform in good condition and other necessary supplies through the AFROTC Supply Office under the uniform commutation system. Upon completion of the course of instruction, or upon withdrawal, the uniform and other supplies are turned in and the deposit returned to the student.

Advanced Air Force students are furnished regulation officer uniforms. Upon graduation, the uniform becomes the property of the advanced student.

Distinguished AFROTC Graduates

Distinguished AFROTC Graduates will be considered for appointment in the Regular Air Force. This appointment is the same as commissions received from the Air Force Academy. All other AFROTC graduates will be tendered reserve commissions.

The Professor of Air Force Aerospace Studies may designate as a Distinguished AFROTC Graduate a cadet who:

1. Possesses outstanding qualities of leadership and high moral character.

2. Demonstrates leadership ability through achievements while participating in recognized campus activities, both curricular and extra-curricular.

3. Has a standing in his academic and military classes which, in conjunction with (1) and (2), above, warrants designation as "Distinguished," and consideration for an appointment in the Regular Air Force.

Description of Courses by Departments

This section contains all courses offered in the University, listed by departments, arranged in alphabetical order.

Courses bearing the numbers from 000 to 099 inclusive are remedial courses carrying no degree credit; those bearing the numbers 100 to 199, inclusive, are normally offered for freshmen; those from 200 to 299, sophomores; 300 to 399, juniors; 400 to 499, seniors; 500 to 599, fifth year students; 600 to 699, graduate students; and 700, doctoral candidates.

Description of courses in each department includes: (a) course number; (b) descriptive title; (c) in parentheses, credit in quarter hours, i.e. one quarter (5), two quarters (5-5), etc.; (d) lecture and laboratory hours for courses with laboratory (where no statement is made the course consists of lecture periods equal in number to course credit); (e) the quarter in which the course is offered; (f) prerequisite (Pr.); (g) description of subject matter and method.

Preceding the description of courses for each department is a list of the departmental faculty.

INDEX BY FIELDS OF INSTRUCTION

(Departmental symbols in parentheses)

Administration, Supervision, and Guidance (AED).....	171	Health, Physical Education and Recreation (HPR).....	230
Aerospace Engineering (AE).....	173	History (HY).....	234
Aerospace Studies (AF).....	176	Home Economics (HE).....	237
Agricultural Economics and Rural Sociology (AS).....	178	Horticulture (HF).....	243
Agricultural Engineering (AN).....	179	Industrial Engineering (IE).....	246
Agronomy and Soils (AY).....	181	Industrial Laboratories (IL).....	248
Animal Science (AH).....	183	Interdepartmental Education (IED).....	249
Architecture (AR).....	185	Journalism (JM).....	252
Art (AT).....	188	Laboratory Technology (LT).....	252
Aviation Management (AA).....	190	Library (LY).....	253
Botany and Plant Pathology (BY).....	192	Mathematics (MH).....	253
Building Technology (BT).....	195	Mechanical Engineering (ME).....	256
Chemical Engineering (CN).....	196	Military Science (MS).....	261
Chemistry (CH).....	198	Music (MU).....	262
Civil Engineering (CE).....	201	Naval Science (NS).....	266
Dairy Science (DH).....	204	Pharmacy (PY).....	266
Drama (DR).....	205	Philosophy (PA).....	270
Economics (EC).....	207	Physics (PS).....	271
Electrical Engineering (EE).....	212	Political Science (PO).....	274
Elementary Education (EED).....	215	Poultry Science (PH).....	276
Engineering Graphics (EG).....	217	Pre-Engineering (PN).....	278
English (EH).....	218	Psychology (PG).....	278
Foreign Languages (FL).....	221	Secondary Education (SED).....	280
Forestry (FY).....	223	Secretarial Administration (SA).....	282
Foundations of Education (FED).....	226	Sociology (SY).....	283
General Electives (GE).....	168	Speech (SP).....	285
Geography (GY).....	228	Textile Engineering (TE).....	289
Geology (GL).....	229	Vocational, Technical, and Practical Arts Education (VED).....	290
		Veterinary Medicine (VM).....	293
		Zoology-Entomology (ZY).....	299

General Elective Courses (GE)

Courses listed below are of non-technical and cultural nature offered as lecture and reading courses with three credits per quarter, for use primarily as electives in the junior, senior, and fifth years. With the approval of the dean they may be used as general electives elsewhere in the curriculum.

- AF** Advanced Aerospace Studies (3). Lec. 3, Lab. 2.
For students selected.
- AR 360.** Appreciation of Architecture (3). Pr., sophomore standing. (Not open to AR and ID students.)
Architectural development with particular attention to American and contemporary examples. Illustrated lectures, readings, essays.
- AR 370.** Spaces of Living (3). Pr., junior standing. (Not open to AR and ID students.)
Contemporary concepts of design, spatial organization, materials, furnishings, and gardens in relation to all major types of residential architecture. Illustrated lectures, readings, reports.
- BY 308.** Plants and Man (3). Lec. 3. Summer.
Brief introduction to the botanical characteristics of most categories of plants including their kinship, origin, past and present distribution, and various ways utilized, as timbers, fruits and other foods, fibers, forage, ornamentals, drugs, etc. Local field trips will be made. (Restricted to students who have no more than 5 hours credit in Botany.)
- CL 342.** Geology (3). Pr., CH 104 or sophomore standing.
General geology including the common minerals and rocks, geologic processes, and a brief survey of historical geology. Credit for CL 101, 102, or 103 excludes credit for this course.
- DR 313.** Drama Appreciation I (3). (Not open to Drama majors.)
Survey of the theatre and stagecraft from early times to the present day, emphasizing the social and artistic position of the stage in each civilization. Illustrated lectures, readings.
- DR 314.** Drama Appreciation II (3). (Not open to Drama majors.)
Survey of contemporary plays and productions, aimed to make theatre-going intelligent fun.
- EC 206.** Socio-Economic Foundations of Contemporary America (3).
Appraisal and survey of the social and economic developments which lead to and help toward an understanding of present day American society. Economic and social institutional development is studied against the background of the Industrial Revolution.
- EC 340.** Personal Finance (3). Pr., junior standing.
Informative study of plans for managing personal financial problems involving insurance, housing, household budgeting, investments, personal and bank loans, credit and time buying, etc.
- EED 310.** Reading Improvement (3). Lec. 2, Lab. 2. Available as an elective course to all University students.
- EH 208.** Literature of the Western World (3). Pr., EH 108 or EH 253. All quarters.
Study of about eight significant literary works of the Western World which provide representative views of man in the Medieval, Renaissance-Reformation, and Eighteenth Century periods.
- EH 301.** Creative Writing (3). Fall, Spring.
Devoted principally to the writing and criticizing of short stories. The student may be permitted to write poetry, drama, or any other form of imaginative literature.
- EH 302.** Creative Writing (3). Fall, Spring.
Continuation of English 301.
- EH 310.** Word Study (3). Fall, Spring.
History of English words and their meanings with the object of improving the student's command of his language and illustrating for him some of the patterns in the development of human thought.
- EH 320.** An Introduction to Drama (3). Winter.
Representative tragedies and comedies of Europe from antiquity to the present. Such figures as Sophocles, Moliere, Shakespeare, and Ibsen will be considered.
- EH 350.** Shakespeare's Greatest Plays (3). (Not open to students with credit in EH 451-52.)
Some of Shakespeare's masterpieces.
- EH 360.** Continental Fiction (3). Winter.
Representative European short stories and novels.
- EH 365.** Southern Literature (3). Spring.

EH 381. The Literature of the Age of Reason (3). Fall.

Rationalism, its assumptions and its effects, political, social, and scientific as seen in the works of such major eighteenth-century writers as Locke, Johnson, Burke, Voltaire, and Rousseau.

EH 385. Literature in the Scientific Age (3). Winter.**GY 301. Geo-Political Basis of World Powers (3). Pr., junior standing.**

Deals with the interaction between the natural-physical environment and the international activities of world powers. Emphasis is placed upon the changing geographic and economic patterns in world affairs.

GY 303. Geography of the Soviet Union (3). Pr., junior standing.

Physical and human geography of the U.S.S.R. and its role in international affairs.

HE 302. Cultural Aspects of Food Service (3). Each quarter.

The accessories used for table service in their relation to each other and to the complete service of meals. Principles of flower arrangement are studied and forms of the different food services in the home.

HE 304. Home and Family Life (3). Lec. 3. Each quarter.

The relationship of family members, economic and social problems at all age levels, and development tasks of individuals.

HE 306. Personal Appearance and Social Interaction (3). All quarters.

Good grooming, its contributing factors and their influence on social and business relations.

HE 345. Creative Crafts (1-2-3). Lab. 9.

Design and execution of creative crafts; viz., metal work, ceramics, weaving, fabric decoration.

HE 353. Community and Family Health (3). Lec. 2, Lab. 2.

Health problems related to the community and family including a survey of available health facilities with field trips.

HE 355. Consumer Textiles (3). Fall, Winter, Spring.

Textile fabrics, finishes and trade practice with special emphasis on consumer problems.

HE 365. Creative Metalwork and Mosaics (1-3). Lab. 9. General elective. Fall quarter.

Design and experience in executing work in the areas of creative metalwork, jewelry, enameling, and/or mosaics.

HE 372. Nutrition and Health (3).

The fundamentals of human nutrition. Food requirements of different age levels and selection of food at different cost levels are considered. Open to all students except Nutrition or Nursing Science majors. (Credit in this course excludes credit in HE 392.)

HE 375. Creative Ceramics (1-3). Lab. 9. General elective. Winter quarter.

Various clays, building processes, ceramic glazes, and ceramic design.

HE 385. Creative Weaving, and Fabric Decoration (1-3). Lab. 9. General elective. Spring quarter.

Creative experiences in the design of and various ways to decorate fabric, such as creative stitchery, block print, stencil, batik, dyeing; or a study of weaving design and experiences in selecting yarns, setting up a loom, and weaving one's own fabric.

HF 225. Flower Arranging (3). Lec. 2, Lab. 2. Fall.

Principles and practices of flower arranging in the home.

HY 204. History of the Modern World (3). (Credit in HY 208, 312, and 313 excludes credit for this course.)

The major periods of modern history and the factors contributing to the Modern World Civilization. (Primarily for students in Engineering curricula.)

HY 314. United States Colonial History (3). Pr., junior standing.

The political, economic, and social history of the colonies from their founding to the end of the French and Indian War, 1763.

PO 311. International Organization (3). Pr., junior standing.

Traces the evolution of international organization from the beginning through the United Nations.

HY 322. The United States in World Affairs (3). Pr., junior standing.

The influence which the United States has exerted in international affairs.

HY 371. History of the West (3). Pr., junior standing.

Brief history of the development of the West and of its influence on American History.

MS Advanced Military Science (3). Lec. 3, Lab. 2.

For students selected.

MU 372. History of Jazz (3).

The growth of jazz from its African and European roots to current experimentation.

MU 373. Appreciation of Music (3). May not be taken for credit by music majors or minors.) Outstanding composers and compositions. No previous music training required. An orientation in the art of listening.

MU 374. Masterpieces of Music (3). May not be taken for credit by music majors or minors.) Representative musical works of each great period of musical history. No previous music training required.

MU 401. Fundamentals of Music (3). (No credit allowed to music majors or minors.) Representative musical works of each great period of musical history. No previous music training required.

MU 477-8-9. Music Arranging (3-3-3). By permission. Project course in arranging various combinations from quartet to symphonic band, and arranging for solo and choral groups.

NS Advanced Naval Science (3). Lec. 4, Drill 2.
For students selected.

PA 301. Introduction to Philosophy (3). The great philosophical problems underlying western civilization.

PA 302. Introduction to Ethics (3). The general principles of morality as applied to human conduct.

PA 308. Introduction to Logic (3). (Not open to students with credit in PA 307.) Principles of logical thinking with emphasis upon functional application of these principles.

PA 310. Eastern Religious Thought (3). Readings from primary and secondary sources related to Hinduism, Jainism, Buddhism, Taoism, Confucianism, Shintoism, and Sikhism.

PA 315. Western Religious Thought (3). Readings from primary and secondary sources related to Ancient Egyptian, Mesopotamian, and Greek religions, Judaism, Zoroastrianism, Christianity, and Islam.

PG 311. The Behavior of Man (3). (Not available to students with credit in PG 211. May be used as a prerequisite for PG 325, PG 330, PG 345.) The science of behavior and a survey of the field of psychology. (Credit not allowed for both PG 211 and PG 311.)

PS 217. Astronomy (3). Descriptive astronomy, accompanied by occasional observations of the heavenly bodies with a three-inch refracting telescope.

SP 270. Group Leadership (3). Nature and functions of group leadership; the role of democratic leadership in organizing and conducting a group meeting to reach the aims of that group. Students gain leadership experience in class activities designed to help them learn and perfect democratic leadership techniques.

SP 210. Public Speaking (3). (Credit in this course excludes credit of SP 211.) Aids the student in preparing and delivering effective public speeches extemporaneously. Emphasis is on narrative, expository, argumentative, and motivational speeches.

SP 371. Parliamentary Procedure (3). Aids the individual who may lead or participate in discussions or organizations where orderly procedure is needed. Theory and practice both employed.

SP 310. Great American Speeches (3). All quarters. Representative outstanding American speeches; the issues with which they were identified; their relation to the social scene.

SY 205. Preparation for Marriage (3). Basic factors in dating, courtship, mating selection, and engagement in preparation for marriage and family living.

SY 311. Technology and Social Change (3). Pr., junior standing. Relationship between technological development and changes in modern society. Special emphasis is placed upon the human relations aspect of modern science. Designed primarily to meet social science needs of students in the fields of engineering, agriculture, education, and the physical sciences.

SY 312. Marriage Adjustments (3). Pr., junior standing. Emotional, social and biological factors in the family setting with emphasis upon adjustments of marriage and parenthood.

ZY 204. Insects (3). Introduction to the life processes, occurrence, and importance of insects. (Credit not allowed to students who have credit in a more advanced course in entomology.)

ZY 205. Wildlife Conservation (3). Fall.

Conservation and natural history of important wildlife, animals, especially Alabama fish, amphibians, reptiles, birds, and mammals. Some field trips will be required as substitute for part of the scheduled lectures.

ZY 206. Conservation in the United States (3). Winter, Spring, Summer.

Basic facts essential to an understanding of current problems pertaining to the conservation of our rapidly depleting natural resources such as soil, water, minerals, forest, and wildlife. Especially planned for elementary and high school teachers.

ZY 207. Birds (3). Fall, Summer.

Birds in relation to agriculture and game management, recognition of various species as to flight, color markings, songs, and feeding habits.

ZY 210. Fish Culture (3). Winter.

Introduction to the construction and management of ponds, and the principles underlying fish production; also fishing methods, bait production, and the identification of the more common sport fish.

Administration, Supervision, and Guidance (AED)

Head Professor Pharis

Professors Lovell, Pierce and Saunders

Associate Professors Harlan, Jordan and Tincher

Assistant Professors Donnan, Horne, Michels, Moore,

Ross, Teague and Walden

Prerequisites and corequisites in the Department of Administration, Supervision, and Guidance are: experience in teaching; employment or definite professional objectives leading to employment in administration, supervision, or guidance; AED 681, 670, or 621, or equivalent, as prerequisite or corequisite to advanced study in any of the specialized areas; and FED 600, FED 451, FED 647, and FED 661, or equivalent, as prerequisite or corequisite to specialized study in administration, supervision, or guidance.

ADMINISTRATION AND SUPERVISION

Primarily for Graduate Students

670. Supervision of the Instructional Program (5).

Assists superintendents, supervisors, principals, teachers, and other educational leaders in understanding the meaning, purpose and function of supervision, the basic factors in the improvement of teaching, and in understanding and evaluating the various concepts of educational leadership as they apply to the improvement of teaching effectiveness.

681. Organization and Administration of Public Education (5).

For superintendents, principals, teachers and other educational leaders. Topics include purposes of organization and administration; organization and administration on federal, state, and local levels; financial support and accounting; operation of plant; school-community interaction, and personnel administration.

683. The Leadership Role in Educational Administration (5).

Current theories, concepts and principles of leadership and their application to education. Further emphasis placed on the responsibility of the educational administrator for leadership in the school and community, in the continuous improvement of staff competence and principles, and in evaluation of effective leadership.

685. Administrative Organization and Behavior (5).

Current theories and concepts of formal organization and of collective behavior. Includes a social-psychological approach to organizations, and treats current trends in organizing for instruction.

686. Administration and Policy Formation (5).

Analysis of basic social forces, antecedent movements, and political action leading to formal enactment of educational policy at national, state, and local levels. Consideration is given to the roles and functions of governing and regulating boards and agencies.

688. School Finance and Business Administration (5).

Theories and principles of school support including responsibility of federal, state and local agencies; state foundation programs, preparation, and administration of salary schedules, budgeting and business administration including purchasing and accounting insurance and bonding.

689. Planning and Maintenance of School Buildings (5).

The relationships of plant and plant maintenance to the quality of education; an analysis of population growth and distribution as related to building needs, selection of sites, finance programs, problems of building utilization, evaluation, equipment, maintenance and custodial services.

- 690. Administering Auxiliary Services in the Public Schools (5).** The purposes and role of auxiliary school services. Special attention given to the administration of transportation, school lunch, safety, health and medical problems.
- 692. Constitutional, Statutory and Judicial Foundations of Education (5).** The constitutional and statutory provisions for education and an analysis of judicial decisions affecting education. Among topics are authority and responsibility of the teacher; rights, privileges and responsibilities of students; use of school property, taxation; curriculum, contracts and retirement provisions; contractual capacity and liability, and transportation.
- 693. Personnel Administration (5).** Assists educational leaders in acquiring knowledge and developing understandings with respect to the relationships between effective personnel administration and the quality of education. Emphasis placed on research results and experimentation in areas such as morale, welfare, work loads, pupil accounting, and bases for salary determination as they relate to staff and pupil personnel.

GUIDANCE

For Advanced Undergraduates and Graduates

- 421. Guidance in the Public Schools (5). Pr., senior standing.** Emphasizes understanding guidance relationships in the classroom. Not open to graduate students majoring in guidance and counseling.

Primarily for Graduate Students

- 621. Principles of Guidance and Student Personnel Work (5).** Enables students to develop a conceptual framework for viewing the inter-relationship of guidance and counseling in terms of (1) personal and social factors and (2) their place in a comprehensive program of student personnel work. Prerequisite to all further study in guidance and student personnel work.
- 622. Introduction to Rehabilitation Counseling (5). Pr., AED 628 and Permission of Instructor.** Counseling process in the rehabilitation setting. Focusing also on the historical development, duties, legal background, ethics and the setting.
- 624. Medical and Adjustment Aspects of Disability (5). Pr., Permission of Instructor.** Orientation to medical and adjustment aspects of the disabled individual. Understanding and using medical and paramedical personnel effectively in the rehabilitation process.
- 625. Vocational Appraisal (5). Pr., PG 415 or equivalent and permission of instructor.** Appraisal of interest, aptitude, and personality tests used in the process of counseling with individuals confronted with vocational decisions. Laboratory practice in test administration, scoring, interpretation, and reporting.
- 627. Problems in Guidance (5). Pr., permission of the instructor.** Develops competency in the application of counseling theory and research findings, with special emphasis on educational problems.
- 628. Counseling Theory and Practice I (5). Pr. or coreq., AED 621, AED 638; pr., PG 415, 433.** Presents alternative theoretical strategies of counseling; integrates the concepts of individual analysis and the collection and dissemination of educational and occupational information with those of counseling; prepares the student for further study of the theoretical and practical aspects of counseling.
- 629. Counseling Theory and Practice II (5). Pr., AED 628.** A continuation of AED 628.
- 630. Group Procedures in Counseling (5). Pr., AED 621.** The history, philosophy, and principles of group counseling and guidance. Includes pertinent research, and the dynamics of group interaction in counseling settings.
- 632. Organization and Administration of Guidance Programs (5). Pr. or coreq., AED 621.** For administrative and guidance personnel. Primary purpose is to identify the major functions of education, perceive guidance in this perspective and then to study the organization, administration, and evaluation of guidance programs in their educational setting.
- 633. Analysis of the Individual (5). Pr. or coreq., AED 621; pr., PG 415.** Assists teachers and other guidance personnel in acquiring knowledge, understanding and skill necessary to obtain records and appraise information about the pupil as an individual and as a member of a group.
- 638. Information Services in Guidance and Counseling (5). Pr., or coreq., AED 621; pr., PG 415, 433.** Helps school counselors develop an understanding of the individual appraisal service and its relationship to counseling; the educational and occupational information service and its relationship to counseling.

HIGHER EDUCATION

618. Organization and Administration of Higher Education (5). Pr., IED 663 or IED 665, or permission of the instructor.
 For educational leaders in higher education. Provides a study of the organization, administration, and evaluation of institutions in higher education in terms of the academic program, student personnel services, business affairs, and related programs. Includes the relationship between higher education and the state and federal government.
697. Student Personnel Work in Higher Education (5). Pr., AED 621.
 Theories, principles, practices, organization, administration, and evaluation of student personnel services in higher education.

GENERAL

646. Studies in Education (1-3). Pr., one quarter of graduate study and departmental approval.
 A special problem in administration, supervision, guidance, or higher education using research techniques. (Credit in ED 651 prior to 1960 excludes credit for this course.)
650. Seminar in Area of Specialization (5). Pr., permission of the instructor.
 Provides an opportunity for advanced graduate students and professors to pursue cooperatively selected concepts and theoretical formulations.
651. Internship in Area of Specialization (5). Pr., permission of the instructor; may be repeated for a total of not more than 15 credits.
 Provides advanced graduate students with full-time, supervised, on-the-job experiences in a school, college, or other appropriate setting. These experiences are accompanied by regularly scheduled, on-campus discussion periods, designed to provide positive evaluation and analysis of the field experience.
659. Practicum in Area of Specialization. (Credit to be arranged.) No more than 10 hours of practicum credit may be earned at Master's Level. Pr., permission of major professor.
 Provides advanced graduate students with supervised experiences with emphasis on the application of concepts, principles, and skills acquired in previous course work.
699. Research and Thesis (Credit to be arranged). May be taken more than one quarter.
798. Research and Thesis (5).
799. Research and Dissertation (Credit to be arranged).

Aerospace Engineering (AE)

Head Professor Pitts

Professors Djordjevic, Martin, and Sforzini*

Associate Professors Cutchins, Drummond, Harwell, and Sherling

*Assistant Professors Barlow**, Burkhalter**, Nichols***, and White***

Instructors Cochran and Pallas

205. Aerospace Fundamentals (3).
 Introduction to aerospace concepts and terminology. Consideration is given to the schemes and designs of aerospace systems.
300. Aerospace Analysis I (4). Pr., MH 361.
 Introduction and application of special methods and notations used in Aerospace Engineering.
301. Basic Aerodynamics (5). Lec. 4, Lab. 3. Pr., AE 205, AE 300, ME 301 and ME 321.
 The basic equations of fluid dynamics with application to the prediction of pressure distributions, velocity measuring techniques, and aerodynamic testing facilities. Elementary boundary layer theory and fundamentals of dimensional analysis.
306. Basic Astronautics (3). Pr., AE 205, MH 361.
 Introduction to planetary motion with emphasis on mechanics of the solar system. Designed to acquaint the student with the overall environment and technology of space travel.
308. Aircraft Structures I (6). Lec. 5, Lab. 3. Pr., AE 205 and ME 208.
 The analysis of monocoque structures using shearflow techniques. Deflections of beams, frames and columns. The laboratory portion is devoted to experimental methods of structural analysis.

* Deceased November 10, 1967.

** Resigned August 1967.

*** On study leave to September 1, 1968.

310. **Aerospace Analysis II (4).** Pr., AE 300, ME 322.
Introduction to linear and non-linear systems, linearization procedures, and linear systems analysis techniques. Transfer functions and stability criteria for some aerospace systems and components. Other special techniques as required by advanced courses.
401. **Aeronautical Problems I (1).** Lab. 3. Pr., senior standing.
Investigation of current aeronautical problems; preparation and presentation of technical papers and reports.
402. **Aeronautical Problems II (1).** Lab. 3. Pr., AE 401.
Continuation of AE 401.
403. **Stability and Control (5).** Lec. 4, Lab. 3. Pr., AE 310 and AE 404.
Introduction to the stability and control of flight vehicles including laboratory techniques in the determination of stability parameters.
404. **High Speed Aerodynamics (5).** Lec. 4, Lab. 3. Pr., junior standing and AE 413.
Fundamental principles of compressible flow, including subsonic, transonic, supersonic and hypersonic aerodynamics, high speed wind tunnels and laboratory techniques.
405. **Boundary Layer Theory and Aerodynamic Heating (3).** Pr., junior standing and AE 404.
Theoretical background essential to a fundamental understanding of laminar and turbulent boundary layers and their relation to skin friction and heat transfer. Basic concepts of the continuum, slip and free-molecule flow regimes and their application to typical aerodynamic heating problems.
409. **Aircraft Structures II (5).** Lec. 4, Lab. 3. Pr., AE 308.
The matrix method of structural analysis. The laboratory portion is devoted to the solution of structural problems on the digital computer.
411. **Aerospace Design (3).** Lec. 2, Lab. 3. Pr., permission of instructor.
The design process oriented toward the aerospace fields with emphasis on development of creative thinking and use of team effort.
413. **Theoretical Aerodynamics (5).** Lec. 4, Lab. 3. Pr., AE 301.
Fundamental practices of aerodynamics, potential flow theory, dynamics of viscous fluids. Correlation of potential flows theory with experimental results.
414. **Equilibrium Gas Dynamics (3).** Pr., permission of instructor and junior standing.
Basic concepts of The Equilibrium Kinetic Theory and the equilibrium real gas properties. Aero-thermodynamic fundamentals of external flows for various atmospheric flight conditions in terms of flight speeds, altitudes and vehicle geometry.
415. **Rocket and Jet Propulsion (5).** Pr., junior standing, ME 301 and AE 413.
Thermodynamic cycle of rocket and jet engines, air compressors, and gas turbines. Flow of gasses through ducts and nozzles.
416. **Rocket Propulsion I (3).** Pr., AE 415, junior standing.
Detailed analysis of the thermodynamics, aerodynamics, and design of liquid propulsion rockets.
417. **Rocket Propulsion II (3).** Pr., AE 415, junior standing.
Design and performance analysis of solid propellant rocket motors with emphasis on internal ballistics.
420. **Flight Vehicle Stress Analysis I (3).** Pr., junior standing and AE 409.
Computer techniques applied to the analysis of flight vehicle structures.
421. **Flight Vehicle Stress Analysis II (3).** Pr., junior standing and AE 409.
Stress analysis of pressure chambers and vessels encountered in aerospace applications.
424. **Nonequilibrium Gas Dynamics (3).** Pr., permission of instructor and junior standing.
Nonequilibrium Kinetic Theory of real atmospheric gases. Applications of the thermal and chemical nonequilibrium conditions to the external flows for various flight conditions.
428. **Space Propulsion Systems (5).** Pr., junior standing and AE 415.
Introduction to reaction engines for use in outer space vehicles. Environment of outer space, power requirements for space missions, introduction to relativistic mechanics, nuclear power systems, particle generators, magnetohydrodynamics, plasma accelerators and photonic engines.
429. **Aircraft Vibration and Flutter (5).** Pr., AE 301, ME 322, and AE 409.
Langrangean equation of motion, linear and multiple degree-of-freedom systems, coupled and un-coupled beam vibration, flutter theory.
430. **Rotary Wing Aircraft (5).** Pr., AE 301.
Rotary wing flight characteristics and basic aerodynamics including stability, control vibration and performance.

431. **Astronautics (5).** Pr., AE 306 and AE 310.
Trajectory analysis, including application of digital and analog computers, ballistic missile range parameters and deviation coefficients; satellite orbits and rocket interplanetary trajectories.
440. **Flight Vehicle Performance (3).** Pr., AE 413, AE 310.
Equations of motion for flight vehicles, special cases and solutions including effects of propulsion system and aerodynamic variations.
441. **Dynamic Stability & Control (3).** Pr., AE 403 and junior standing.
Longitudinal and lateral dynamics of aircraft. Response to actuation of controls. Attitude dynamics of spacecraft. Emphasis on design considerations of various vehicles.
442. **Automatic Stability and Control (3).** Pr., AE 441 and junior standing.
Introduction to principles and techniques of automatic control of aircraft and missiles. Effects on design variables.

GRADUATE COURSES

601. **Advanced Supersonic Aerodynamics (5).** Pr., AE 404.
A continuation of AE 404, High Speed Aerodynamics. Consists of a rigorous development of linearized and nonlinearized compressible fluid flow and application. Lifting surfaces, lifting bodies, duct flow and boundary layer effects.
602. **Advanced Elements of High Speed Aerodynamics (5).** Pr., AE 601 or equivalent.
A continuation of AE 601 to include three-dimensional wing theory; slender body theory and similarity laws for subsonic, supersonic and hypersonic flow conditions.
603. **High-Speed Viscous Aerodynamics (5).** Pr., AE 602 or equivalent.
A continuation of AE 602 to include effects of conductivity and viscosity on aerodynamic properties.
605. **Aeroelasticity (5).** Pr., AE 429.
General formulation of aerelastic problems, buffeting, flutter and loss of control, dynamic stresses.
609. **Advanced Aero-Structures (3).** Pr., AE 429.
Vibrations of solids and wave propagation, introduction to general methodology and thermodynamics of solids, derivation of large-deflection equations, principles of basic solids investigations, and application to aerospace structures.
611. **Thrust Generation (5).** Pr., AE 415.
Aerothermodynamics of compressible flow, chemical propellant characteristics, heat transfer in fluid flow, nuclear propulsion.
615. **Hypersonic Flow Theory (5).** Pr., AE 404, Corequisite, MH 461.
Hypersonic continuum theory, governing equations of motion for two and three dimensional flows, hypersonic small disturbance theory, viscous effects. Real gas effects in gasdynamics and rarefied gas flows, basic heat transfer concepts.
619. **Dynamics of Flight (5).** Pr., AE 403, Corequisite, MH 661.
Small-disturbance theory and the linearized solutions of the general equations of unsteady motions, aerodynamic derivative, derivatives analysis, aerodynamic transfer functions, dynamic stability of uncontrolled longitudinal and lateral motions, solutions of the dynamic stability problems by electronic computing devices, inverse problem, automatic stability and control.
631. **Advanced Astronautics (5).** Pr., AE 431 or permission of instructor.
Advanced astrodynamics and trajectory theory; n-body problems; perturbation forces and effects; orbital transfer and trajectory optimization; theory of space guidance. A continuation of AE 431 at the graduate level.
635. **Ion and Plasma Propulsion (5).** Pr., permission of instructor.
Basic physical and gas dynamic processes underlying methods for electrical acceleration of ionized gas flows appropriate to propulsion, electrostatic propulsion, electromagnetic propulsion.
640. **Magneto-Gas Dynamics (5).** Pr., permission of instructor.
Review of electrodynamics, Maxwell stresses, field and momentum-energy tensors. Thermodynamics of fluids in electromagnetic fields. Equations of motion of a conducting gas. Discussion of typical flow problems. Consideration of microscopic aspects of plasma flows.
645. **Shock Tube Theory and Techniques (5).** Pr., permission of instructor.
Shock wave theory in real and perfect gases, expansion wave theory, reflected shock wave theory. Basic shock tube equations; effects of area change, driver types and characteristics. Non-ideal behavior in shock tubes, diaphragm opening effects, boundary layer effects, shock wave attenuation. Testing time derivation. Shock tube techniques and measurements.
690. **Seminar. Credit to be arranged.** May be taken more than one quarter.
Provides weekly lectures on current developments in aerospace sciences by staff members, graduate students, and visiting scientists and engineers.

691. Directed Reading in Aerospace Engineering. (Credit to be arranged, not exceeding 5 hours.) May be taken more than one quarter.
699. Research and Thesis. Credit to be arranged.

Aerospace Studies (AF)

101. **World Military Systems (1).** Lec. 1, Lab. 1.
Develops a fundamental knowledge of the nature and principles of war, national power, and the Department of Defense organization.
102. **World Military Systems (1).** Lec. 1, Lab. 1.
An examination of the Department of Defense's military units with emphasis on the United States Air Force and an introduction to United States Strategic Offensive Forces.
103. **World Military Systems (1).** Lec. 1, Lab. 1.
Continuation of Strategic Offensive Forces with emphasis on the Strategic Air Command and future force requirements. A study of the Strategic Defensive Forces, components, and future requirements.
201. **U.S. General Purpose Forces (1).** Lec. 1, Lab. 1.
The mission, organization, and functions of United States General Purpose Forces.
202. **U.S. Aerospace Support Forces (1).** Lec. 1, Lab. 1.
Mission, organization, and functions of the U.S. Air Force's support commands.
203. **World Affairs (1).** Lec. 1, Lab. 1.
Current threats to peace and the contemporary international actions in the pursuit of peace.
301. **Growth and Development of Aerospace Power (3).** Lec. 3, Lab. 1.
Communicative techniques utilized by students in the POC and the development of airpower from the beginnings of manned flight to 1961.
302. **Growth and Development of Aerospace Power (3).** Lec. 3, Lab. 1.
Current and probable future airpower concepts and doctrine and an introduction to astronautics and space operations.
303. **Growth and Development of Aerospace Power (3).** Lec. 3, Lab. 1.
A continuation of astronautics and space operations with the emphasis on space vehicle systems and space operations.
401. **Military Leadership and Discipline (3).** Lec. 3, Lab. 1.
The need for Air Force leadership and for discipline in the military.
402. **Leadership and Management Skills (3).** Lec. 3, Lab. 1.
The variables affecting leadership and an introduction to military management to include planning and organizing.
403. **Military Management and Pre-Commissioning (3).** Lec. 3, Lab. 1.
Continuation of military management to include coordination, directing, and controlling, and pre-commissioning.

Agricultural Economics and Rural Sociology (AS)

*Professors Yeager, Blackstone, Danner, and White
Associate Professors Bell, Dunkelberger, and Wilson
Assistant Professors Glover, Miller, and McCoy*

102. **Agricultural Economics Orientation (0).** Lec. 1. (Required of all students in Agricultural Business and Economics.)
202. **Agricultural Economics (5).** All quarters. Pr., sophomore standing.
Economic principles in changes and trends in farm-related production, marketing, prices, consumption, taxation, credit, finance, public policies, tenure, etc., and with utilization of land, labor, and capital.
301. **Agricultural Marketing (5).** Pr., AS 202 or EC 200.
Principles and problems in marketing farm products. Analysis of marketing functions, services, and costs; reducing costs and improving marketing efficiency. Marketing methods and distribution channels of major farm commodities. Market institutions and operation.
302. **Farm Records (3).** Pr., AS 202 or EC 200.
Farm records and accounts and their uses. Kinds and systems of records and accounts adapted to use on Alabama farms.
303. **Agricultural Cooperatives (3).** Pr., AS 202.
Principles and problems of organizing and operating farmers' cooperative buying and selling associations.
304. **Agricultural Finance (3).** Pr., AS 202.
Economic problems and policies in financing agriculture.

305. **Farm Appraisal (3).** Pr., AS 202.
The theory of land values; techniques on farm land and building appraisals for different purposes; relationships of land use, soils, crops, forestry management, buildings, land titles, farm prices, taxes, and interest rates to land values; actual appraisals of selected farms; evaluation of appraisal methods and forms currently in use.
361. **Rural Sociology (5).** Pr., sophomore standing.
The basic sociological concepts and principles as applied to life in the rural community. Special attention given to the culture, social organization, and social problems of rural people in the United States, and in the South in particular. Credit not allowed in this course and SY 201.
370. **Methods of Social Research (5).** Pr., AS 361 or SY 201.
The principal methods of data collection and analysis in sociological research. Same course as SY 370. Credit in AS 370 excludes credit in SY 370.
401. **Farm Management (5).** Pr., AS 202 or EC 200 and junior standing.
Principles and problems in acquiring, organizing, and operating a successful farm business. Formation and integration of family and farm business goals.
403. **Agricultural Prices (3).** Pr., AS 202 or EC 200 and junior standing.
Principles and factors in the pricing process with special reference to agricultural products and markets. Functions of prices and principles of supply and demand in price determination.
405. **Agricultural Policy (3).** Pr., AS 202 or EC 200 and junior standing.
Concepts, objectives and operation of public policies affecting agriculture. Development of agricultural policies in the United States.
410. **Agricultural Business Management (3).** Pr., AS 202 or EC 200 and junior standing.
Principles and problems involved in acquiring, organizing and operating successful agricultural businesses; capital requirements for selected agricultural businesses, factors affecting location and growth, and measures of technical and economic efficiency in organization and operation; practices involved in buying, pricing, and merchandising; management problems and policies in financing, personnel, and public relations.
411. **Economic Development of Rural Resources (3).** Pr., AS 202 and junior standing.
Theoretical and empirical study of economic growth and development; problems of underdeveloped and underdeveloped areas; role of agriculture in a developing economy; examination of the policies and programs for effective economic growth and development.
412. **Economic Aspects of Water Resources Management (5).** Pr., junior standing.
The supply, demand, and use of water resources including its economic, legal, and political dimensions. Economics of management of water resource use and conservation in terms of present and future supplies and needs. Both public and private water resources will be considered.
420. **Cooperation in Agriculture (3).** Lec. 4. Pr., graduate standing or consent of instructor.
Includes cooperative and economic theory as well as economic and legal aspects of cooperatives. (A course designed primarily for credit at off-campus centers.)
441. **History and Philosophy of Extension (3).** Lec. 4. Pr., junior standing.
The Cooperative Extension Service as an educational institution. This course can meet the needs of students preparing for work in Cooperative Extension as well as those currently so engaged. (Credit in HE 401 excludes credit in this course.)
460. **Introduction to Econometrics (3).** Pr., MH 122 or equivalent, EC 245 or equivalent, and AS 202 or equivalent, and junior standing.
Formulation of elementary economic models using economic theory and mathematics with certain basic assumptions or axioms. Mathematical tools used in economic analysis.
461. **Sociology of Rural Life (3).**
Comparative study of the structure and function of rural communities throughout the world with emphasis on their limitations and potentials for social changes and adjustments. Rural life in the United States will be used as the primary basis for comparison.
462. **Rural Communities Around the World (3).** Pr., SY 201 or AS 361, and junior standing.
Structure and function of rural communities throughout the world with emphasis on their limitations and potentials for social changes and adjustments. Rural life in the United States will be used as the primary basis for comparison. Same as SY 462.
480. **Agricultural Commodity Marketing. A. Livestock, B. Dairy, C. Poultry, D. Crops Marketing (3).** Pr., AS 202 or EC 200 and junior standing. May be taken up to a maximum of 12 hours but work may not be repeated in any one area.
Economic analysis of market movement and pricing, functional analysis, and institutional aspects of marketing major products in each category.

- 490. Senior Seminar (1). Lec. 1. Pr., senior standing.**

Current developments in Agricultural Economics; the role of Agricultural Economics in the general economy.

GRADUATE COURSES

- 601. Advanced Farm Management (5). Pr., graduate standing or consent of instructor.**

Advanced theory and application of farm management principles and other economic concepts in agriculture. Organization, operation, and management of various types of farms. Optimum utilization of available resources on individual farms.

- 602. Advanced Agricultural Prices (5). Pr., EC 245 and graduate standing or consent of instructor.**

Methods of price analysis, separation of fluctuations from price trends, measurement of changes in supply and demand of farm products. Prices, price trends, price cycles, and other price structures.

- 603. Land Economics (5). Pr., graduate standing or consent of instructor.**

Principle economic and institutional factors affecting man in his use of land. Supply, demand, and future requirements for land. Property rights, land planning, zoning, and other social controls affecting land utilization. Land appraisal and valuation.

- 605. Advanced Agricultural Marketing (5). Pr., graduate standing or consent of instructor.**

Theory of marketing with emphasis on its application to methods used and problems faced in marketing Alabama-produced farm products. Objectives in agricultural marketing.

- 606. Agricultural Market Organization (5). Pr., EC 451 and graduate standing or consent of instructor.**

The theoretical approach to marketing problems characterized by imperfectly competitive structures and multiple markets separated by time, space, and form attributes. Theory of interregional trade and location of economic activity. Efficiency of firms and product movement.

- 608. Economics of Agricultural Production (5). Pr., EC 451 and graduate standing or consent of instructor.**

Resource allocation and efficiency of production. Production and efficiency in the firm, between firms, and between agriculture and other industries. Influences on agricultural resource allocation and efficiency of risk and uncertainty including price instability, institutional changes, technological advances, imperfect knowledge of production methods, and variations in the human element with emphasis on the role of management.

- 609. Dynamics of Agricultural Production and Management (5). Pr., AS 608 and graduate standing or consent of instructor.**

Dynamics of resource allocation and efficiency of production as influenced by price, institutional, and technological changes. Imperfect knowledge and the human element in management.

- 616. Resource Economics, Policies and Programs (5). Pr., graduate standing or consent of instructor.**

Impact of resource development on regional economic growth. Effect of taxation and tax policies. Interaction between technological change, resource use, and economic growth. Analysis of current policies and programs.

- 641. Extension Methods (3). Lec. 4. Pr., AS 441 or the equivalent.**

Extension programs are reviewed and related to effective program accomplishment for particular objectives and under different conditions that might prevail.

- 642. Extension Programs (3). Lec. 4. Pr., AS 441 or the equivalent.**

The over-all Extension organization and its relation to the steps and procedures of program development and evaluation. Designed particularly to meet the needs of persons responsible for Extension program development and evaluation at the county level.

- 651. Farm Organization and Management (3). Lec. 4. Pr., graduate standing.**

Formation and integration of family and farm business goals; acquisition, organization, operation and management of successful farm businesses; organization and management of efficient farm units. (Credit for both AS 651 and AS 601 may not be used to meet requirements for the Master's degree.)

- 652. Agricultural Prices and Marketing (3). Lec. 4. Pr., graduate standing.**

Principles and problems in marketing agricultural products. Objectives in agricultural marketing. Factors involved in the pricing process of agricultural products and markets. (Credit for both AS 652 and AS 602 may not be used to meet requirements for the Master's degree.)

- 653. Public Policy in Agriculture (3). Lec. 4. Pr., graduate standing.**

Concepts, objectives, and operation of public policies affecting agriculture; development of agricultural policies in the United States; alternative methods of dealing with farm problems and opportunities at national, state, and local levels.

662. Social Organization and Communities (3). Lec. 4. Pr., graduate standing. The organization of rural society and an application of the group dynamics perspective to rural community life, problems in rural living, and proposals for facilitating action programs in rural areas.
670. Research Methods in Agricultural Economics and Rural Sociology (3). Pr., graduate standing and consent of instructor.
680. Special Problems in Agricultural Economics and Rural Sociology. Credit to be arranged.
690. Seminar (1-1-1). Fall, Winter, Spring.
699. Research and Thesis. Credit to be arranged.

Agricultural Engineering (AN)

Professor Kummer

Research Lecturers Cooper, Gill, Larson, Nichols, Reaves, and Taylor

Associate Professor Renoll

Assistant Professors Hendrick, Hermanson, and Lalor

Instructor Koon

101. Engineering and Agriculture (1). Lec. 1. The role of engineering in agriculture.
102. Agricultural Engineering Profession (1). Lec. 1. Developments in the major fields of agricultural engineering.
201. Soil and Implement Mechanics (3). Lec. 2, Lab. 3. Fall. Pr., EG 104. Soil and implement relationships of common tillage tools. Machinery economics with respect to size and capacity of machines. Implement design as related to tilth.
205. Agricultural Engineering Design (2). Lab. 4. Graphical representation of agricultural systems. Exercises in working drawings of agricultural machines, structures, and materials handling devices.
302. Agricultural Structures Design I (3). Lec. 2, Lab. 3. Pr., ME 208. Analysis and design of structural systems of agricultural buildings.
307. Physical Properties of Agricultural Materials (3). Lec. 3. Pr., BY 101, ME 208. Physical and mechanical properties of agricultural materials as related to machine design and agricultural process engineering.
309. Electrical Systems in Agriculture (3). Lec. 3. Pr., EE 304. Application of electrical power, equipment and control devices to agricultural systems.
350. Soil and Water Technology (5). Lec. 4, Lab. 3. Fall, Spring, Summer. Technical application of soil and water resources management. Irrigation system planning and equipment selection.
351. Agricultural Machinery Technology (5). Lec. 4, Lab. 3. Fall, Spring, Summer. Agricultural machinery: utilization, management, selection, and economic justification.
352. Tractor and Engine Technology (5). Lec. 4, Lab. 3. Winter. Tractors and engines. Operation, fuels used, size selection, utilization, and economic justification.
353. Farm Building Technology (5). Lec. 4, Lab. 3. Winter. Selection of materials, methods of construction and functional needs of modern farm buildings.
354. Agricultural Processing Technology (5). Lec. 4, Lab. 3. Agricultural processing systems; includes storing, drying, pelletting, mixing and automatic materials handling systems.
401. Mechanics of Tractor Power (5). Lec. 3, Lab. 4. Winter. Pr., ME 310, junior standing. Construction, design, and operating principles of the farm tractor. Mechanics of tractor stability, traction, weight transfer, and safety. Tractor efficiency.
403. Soil and Water Engineering (5). Lec. 4, Lab. 3. Fall. Pr., CE 210, CE 308, junior standing. The relationship of soils, rainfall, runoff and topography to drainage and terrace systems design.
405. Irrigation Design (5). Lec. 4, Lab. 3. Spring. Pr., AN 403 and junior standing. The design of flood, furrow, and sprinkler irrigation systems, including the development of water supply sources, pumping and power requirements; the determination of irrigation efficiencies and techniques.

407. Agricultural Machinery Design Analysis (5). Lec. 3, Lab. 4. Fall. Pr., AN 201, junior standing.
Design, construction, and comparative analysis of component parts of farm machines other than tractors. Includes use of dynamometers, electrical resistance strain gages and functional analysis instrumentation.
408. Agricultural Tractor Design Analysis (3). Lec. 2, Lab. 3. Winter. Pr., AN 401, junior standing.
Use of electronic analysis instrumentation equipment in the evaluation of tractor design elements and construction principles with respect to thermal and tractive efficiency, vehicle stability, tractor hitches and weight distribution.
409. Agricultural Processing (3). Lec. 3. Pr., AN 307, AN 309 and junior standing. Analysis and design of materials handling systems and processing equipment.
415. Agricultural Meteorology (5). Winter. Pr., junior standing and approval of instructor.
Meteorological variables and their modification near the surface of the earth. Included are solar and terrestrial heat exchange; humidity, temperature, wind relationships; instrumentation and measurement of meteorological elements and the application of meteorological information to agriculture.
416. Agricultural Structures Design II (3). Lec. 3. Pr., AN 302 and junior standing. Functional requirements and design of animal shelters and agricultural storage buildings.
422. Farm Power and Equipment (5). Summer. Half-quarter course. Pr., AN 303, junior standing. For Vocational Agriculture Teachers.
424. Farm Electrification (5). Summer. Half-quarter course. Pr., junior standing. For Vocational Agriculture Teachers.
426. Farm Irrigation (5). Summer. Half-quarter course. Pr., junior standing. For Vocational Agriculture Teachers.
432. Engineering in Agriculture I—Agricultural Machinery (3). Lec.-Dem. 4. Pr., graduate standing.
The utilization of modern agricultural machinery on the farm with emphasis on safety, management, costs, economic justification, and principles of operation. (Credit for both AN 432 and AN 422 may not be used to meet requirements for the Master's degree.)
434. Engineering in Agriculture II—Agricultural Power (3). Lec.-Dem. 4. Pr., graduate standing.
Farm tractor and power units used on the farm; includes the basic principles of operation with major interest toward lubrication, costs, operational problems, safety and a comparison of gasoline, Diesel, and LP gas fuels, and units. (Credit for both AN 434 and AN 422 may not be used to meet requirements for the Master's degree.)

COURSES PRIMARILY FOR GRADUATE STUDENTS

601. Land Conservation and Development (5). Lec. 4, Lab. 3. Pr., AN 403.
Fundamental problems of hydrology and soil physics applied to the soil erosion process and engineering practices for erosion control. Principles of design for farm drainage and irrigation systems.
602. Advanced Farm Power and Machinery (5). Arrange. Pr., AN 201 and 401.
Principles of operation and analysis of design of basic machine elements, hydraulic systems and functional requirements of farm power units, agricultural machinery and materials of construction.
604. Agricultural Engineering Problems. Credit to be arranged not to exceed a total of 5 hours.
Special advanced engineering and design problems.
605. Soil Dynamics (5). Pr., AY 455.
Analysis and measurements of soil reactions, as affected by the physical properties of the soil, when subjected to forces imposed by tillage implements and traction devices. Considered are shear, cohesion, adhesion, consolidation, plasticity and abrasion soil properties.
608. Seminar. Credit to be arranged. All quarters.
Reviews and discussions of research techniques, current scientific literature and recent developments in agricultural engineering research.
699. Research and Thesis. Credit to be arranged.
May be taken more than one quarter.
799. Doctoral Research and Dissertation. Credit to be arranged.

Agronomy and Soils (AY)

Professors Ensminger, Adams, Cope, Donnelly, Hood, Rogers, Scarsbrook, Sturkie, and Wear

Research Lecturers Pearson and Taylor

Associate Professors Dixon, E. Evans, Hiltbold, Hoveland, and Johnson
Assistant Professors Buchanan, Dickens, C. Evans, and King

201. **Grain Crops (5).** Lec. 4, Lab. 2. Fall, Spring.
 Fundamental factors involved in the economic production of corn, small grains, grain sorghum, peanuts and soybeans.
304. **General Soils (5).** Lec. 4, Lab. 2. Winter, Spring. Pr., CH 105 and 105L or CH 207.
 The formation, classification, composition, properties, management, fertility, and conservation of soils in relation to the growth of plants.
305. **General Soils (5).** Lec. 4, Lab. 2. Winter. Pr., CH 103-104.
 The formation, classification, composition and properties of soils and their influence on vegetative growth and development on forest lands. Open only to students in Forestry.
306. **Soil Morphology and Survey (5).** Lec. 3, Lab. 4. Spring. Pr., AY 304, 305 or 307.
 Physical, mineralogical and chemical properties of soils are studied in relation to their classification for agricultural and engineering uses. Specially designed to fit students for employment as soil surveyors in state and federal agencies.
307. **General Soils (5).** Lec. 4, Lab. 2. Fall, Spring. Pr., CH 103-104.
 The general field of soils including genesis, classification and fertility.
310. **Earth Science (5).**
 Materials of the earth; forces that shape and sculpture the earth's surface, including weathering, water, soil formation and erosion; soil geography; and historical geology. (Not open to students in School of Agriculture. Credit toward degree may not be earned in both this course and a General Soils course.)
401. **Forage Crops (5).** Lec. 4, Lab. 2. Fall, Winter. Pr., junior standing.
 Grass and legume forage crops. The crops are considered from the standpoint of (a) pasture crops, (b) hay and silage crops, (c) soil improving crops.
402. **Soil Fertility (5).** Lec. 5. Spring. Pr., AY 304, 305 or 307, and junior standing.
 Lectures, demonstrations and problems illustrate principles of soil fertility as related to fertilizer practices and crop production. An advanced course required of all students majoring in Agronomy and Soils. Either AY 402 or AY 407, but not both, may be used to satisfy the minimum requirement for the Master's degree.
404. **Cotton Production (5).** Lec. 5. Winter. Pr., junior standing.
 Most of the time will be devoted to cotton with a limited amount of time devoted to other fiber crops.
405. **Turf and Its Management (3).** Lec. 2, Lab. 2. Fall, odd years. Pr., AY 304, BY 306, BY 309, and junior standing.
 Species of turf crops in relation to latitude, soil type, shading, establishment, fertility, and maintenance.
406. **Commercial Fertilizers (3).** Lec. 3. Winter. Pr., AY 304, 305 or 307, or by special permission of instructor; also junior standing.
 Raw material reserves; manufacture, and properties of fertilizer materials, properties and formulation of mixtures; relative efficiency of various plant nutrient sources; and related agronomic problems.
407. **Soil Management (5).** Lec. 5. Summer. Pr., AY 304, AY 305, or AY 307, and junior standing.
 Physical, chemical and biological properties of soils and their management. An advanced course designed for students in Vocational Agriculture. Either AY 402 or AY 407, but not both, may be used to satisfy the minimum requirement for the Master's degree.
408. **Soil Resources and Conservation (5).** Lec. 4, Lab. 2. Fall. Pr., AY 304, 305 or 307 and junior standing.
 Soils as a natural resource for land-use planning; their classification and management for crop production, recreation, and urban and industrial development.
409. **Seed Production (3).** Spring, odd years. Pr., AY 201, or 401 and junior standing.
 Methods and factors affecting production, storage, and processing seed.
410. **Methods of Plant Breeding (5).** Lec. 4, Lab. 2. Fall, even years. Pr., ZY 300 and junior standing.
 A general course in the principles and methods of plant breeding.

411. **Soil Management (3).** Lec. 4. Pr., AY 304, 305 or 307 and graduate standing. Classification, physical properties, moisture, organic matter, and pH of soils, and their management with respect to these properties. (Credit for both AY 411 and AY 402, or AY 407 may not be used to meet requirements for the Master's degree.)
412. **Advanced Forage Crops (3).** Lec. 4. Pr., AY 401 and graduate standing. Forage species and mixtures, their establishment, maintenance and management for different soils and systems of grazing. (Credit for both AY 412 and AY 403 may not be used to meet requirements for the Master's degree.)
414. **Principles and Use of Herbicides in Crop Production (3).** Lec. 2, Lab. 2. Fall. Pr., CH 104 and junior standing. Principles and use of herbicides in agronomic crops. Acquaints the student with methods of application including equipment, time of application, methods of incorporation, and formulations of herbicides. The fate of herbicides in soil and the residual effect on succeeding crops.
455. **Soil Physics (5).** Fall, odd years. Pr., AY 304 and junior standing. Lectures and demonstrations to illustrate fundamental physical properties of soils.

GRADUATE COURSES

601. **Agronomy Problems (1-5).** Credit to be arranged. Conferences, problems, and assigned reading in soils and crops, including results of agronomic research from the substations and experiment fields.
602. **Plant Biological Chemistry (5).** Fall, odd years. Pr., CH 203 or CH 207. Biochemical reactions and factors influencing them. Major emphasis is placed on those reactions concerning plants.
606. **Soil Microbiology (5).** Lec. 3, Lab. 4. Spring, odd years. Pr., AY 402 and VM 200. Soil microorganisms and their physiological processes related to soil development and plant nutrition. The role of microorganisms affecting the chemical and physical properties of soils will be studied, with emphasis on the cyclical transformations of nitrogen, phosphorus, carbon, and sulfur.
608. **Experimental Methods (5).** Fall, even years. Experimentation in the agricultural sciences including experimental techniques, interpretation of research data, use of library references and preparation of publications; and consists of problems, assigned readings, and lectures.
615. **Seminar in Genetics (1).** Pr., ZY 300. Reports by students and staff members on current research and the literature in the field of genetics.
616. **Advanced Plant Breeding (5).** Lec. 4, Lab. 2. Winter, even years. Pr., ZY 300. Principles, methods, and techniques involved in plant breeding. Laboratory work will consist of studying active plant breeding programs, studying pollination techniques, and making pollinations. A term paper will be required.
617. **Experimental Evolution (5).** Spring, even years. Pr., ZY 300 and AY 616. A study of the factors affecting the evolution of species.
618. **Crop Ecology (5).** Winter, even years. Pr., BY 306, 413, and AY 402. Environmental factors influencing the growth of crop plants.
619. **Theories in Forage Crops Management (5).** Lec. 3, Lab. 4. Winter, odd years. Pr., BY 306, 309, and AY 402. Principles involved in successful establishment, maintenance and management of crops used for grazing, hay and silage.
620. **Philosophy and Interpretation of Experimental Research (3).** Lec. 4. Pr., graduate standing. Systematic study of the principles and methods of experimental research; the utility of experimental designs; and the utilization of statistical and graphical aids in the interpretation of data. Mathematical comparisons of the efficiency of designs and calculations of statistical values are not a part of this course.
653. **Soil Genesis and Classification (5).** Spring, even years. Pr., AY 306. Factors and processes which influence soil formation and properties. Weathering of minerals with particular emphasis on clay mineral formation considered in relation to soil classification units. Classification of soils at the family and higher categoric levels presented.
654. **Advanced Soil Fertility (5).** Spring, odd years. Pr., CH 206, AY 402 and 606. Composition and properties of soils in relation to the nutrition and growth of plants.
655. **Soil and Plant Analysis (5).** Lec. 2, Lab. 6. Winter, odd years. Pr., CH 206 and AY 402. Principles, methods, and techniques of quantitative chemical analysis of soils and plants applicable to soil science.

656. **Soil Clay Mineralogy (5).** Lec. 4, Lab. 2. Fall, even years. Crystal structure and properties of the important clay size minerals of soils and clay deposits combined with identification techniques involving X-ray diffraction and spectroscopy, differential thermal analysis, electron microscopy, specific surface analysis, and infrared absorption.
657. **Advanced Soil Chemistry (5).** Fall, odd years. Pr., CH 409, AY 655 and 656. Physiochemical properties of soil colloids.
658. **Advanced Soil Physics (5).** Lec. 2, Lab. 6. Pr., MH 263, PS 205-206, and AY 455. Physical properties of soils in relation to plant growth. Emphasis is placed on methods of measuring soil physical properties and the interpretation of these measurements in terms of plant growth.
699. **Research and Thesis.** Credit to be arranged. Research and thesis on problems related to crop production, plant breeding, soil fertility and soil chemistry.
799. **Doctoral Research and Dissertation.** Credit to be arranged.

Animal Science (AH)

*Professors Warren, Anthony, Patterson, and Strength**
Associate Professors Harris, Huffman, Parks, Smith, Squiers, Tucker,
Turney, and Wiggins
Assistant Professor Daron
Instructor Collins

200. **Introductory Animal Husbandry (5).** Lec. 4, Lab. 2. Fall, Winter, Spring. Provides some understanding of the scope and importance of the field. The importance of livestock to agriculture and to the nutrition of people. The role of nutrition, breeding, selection and management in livestock production.
204. **Animal Biochemistry and Nutrition (5).** Fall, Winter, Spring. Pr., CH 104. Principles of animal biochemistry and nutrition and the nutritional requirements of farm animals.
301. **Livestock Judging (3).** Lec. 1, Lab. 4. Winter, Spring. Pr., AH 200. Theory and practice in the selection of beef cattle, swine, sheep and horses.
302. **Feeds and Feeding (3).** Fall, Spring. Pr., AH 204. Principles and practices of balancing and compounding of rations for beef cattle, sheep, and swine.
303. **Livestock Production (5).** Lec. 4, Lab. 2. Winter. Pr., AH 204. Efficient practices for selection and management of beef cattle, sheep, and swine. For students in Vocational Agriculture and those whose curricula do not include AH 401 and AH 402. Ten or more hours of credit in AH 401, AH 402, or AH 405 excludes credit for AH 303.
304. **Meats (3).** Lec. 1, Lab. 4. Fall. Study and practice in slaughtering, cutting, grading, judging, and evaluating carcasses of meat animals.
309. **Live Animal and Carcass Evaluation (3).** Lec. 1, Lab. 4. Spring. Pr., AH 200. Classifying and grading market hogs, cattle and sheep with major emphasis on indicators of carcass merit. Carcass grading, yield grading and evaluation.
310. **Meat and Meat Products (3).** Lec. 2, Lab. 2. Spring. General Elective. Theory and practice of processing, preservation, selection and uses of meats. Degree credit may not be earned in both AH 304 and AH 310.
401. **Swine Production (5).** Lec. 4, Lab. 2. Fall, Spring. Pr., AH 200, AH 204, junior standing. Practical problems involved in the breeding, feeding, and management of swine for economic production.
402. **Beef Cattle Production (5).** Lec. 4, Lab. 2. Fall, Winter. Pr., AH 200, AH 204, and junior standing. Practical phases of breeding, feeding, and management of beef cattle for economic production.
403. **Animal Breeding (5).** Lec. 4, Lab. 3. Winter. Pr., ZY 300 and junior standing. Application of genetic principles to the breeding of cattle, sheep, and swine. Studies of different systems of breeding and selection and their related efficiencies for livestock improvement.

* On leave.

- 405. Sheep Production (5).** Lec. 4, Lab. 2. Spring. Pr., AH 200, AH 204, and junior standing.
 Types and breeds of sheep; buildings and equipment; types of sheep raising and flock management; nutritional requirements and feeding; sheep breeding, selection and culling; performance testing; wool grading and marketing; lamb grading and marketing; common diseases and parasites and their control.
- 406. Animal Reproduction (5).** Lec. 4, Lab. 2. Fall. Pr., junior standing.
 Anatomy and physiology of the male and female reproductive tract; hormones; estrus and estrus cycle; ovulation, mating, gestation, parturition; lactation; sperm physiology; collection, storage and dilution of semen; artificial insemination; fertility; sterility; pregnancy tests.
- 407. Advanced Livestock Judging (3).** Lec. 1, Lab. 4. Fall. Pr., AH 301 and approval of instructor.
 An advanced course in the selection and grading of livestock.
- 408. Applied Animal Nutrition (5).** Lec. 4, Lab. 2. Winter. Pr., AH 204 and senior standing.
 Principles of animal nutrition and their application to the production of farm animals, including the study of physiology of nutrition, metabolism of nutrients and recent nutritional developments.
- 409. Horse Production (3).** Lec. 2, Lab. 2. Spring.
 The selection, breeding, feeding, management and use of horses in the Southeast.
- 410. Meat Technology (3).** Lec. 2, Lab. 2. Winter. Pr., AH 304 and junior standing.
 Meat curing and processing procedures and the biochemical alterations of meat during aging, curing and processing.
- 411. Undergraduate Seminar (1).** Pr., senior standing.
 Lectures, discussions and literature reviews by staff, students and guest lecturers.
- 418. Biochemistry (5).** Lec. 4, Lab. 3., Fall. Pr., CH 208 and junior standing.
 Classification, structure and chemistry of the major chemical constituents of living matter.
- 419. Biochemistry (5).** Lec. 4, Lab. 3. Winter. Pr., AH 418.
 Introduction to metabolism.
- 450. Advanced Animal Nutrition and Livestock Feeding (3).** Lec. 4. Pr., graduate standing.
 Principles of nutrition, nutritional requirements, compounding of rations, role of additives in livestock feeds and study of newer research findings.
- 451. Breeding and Genetic Improvement of Farm Animals (3).** Lec. 4. Pr., graduate standing.
 A study of basic genetic principles and their application to the breeding of farm animals. Systems of breeding and selection.
- 452. Applied Swine Production (3).** Lec. 4. Pr., graduate standing.
 A study of the basic principles of swine production and the application of recent developments.
- 490. Special Problems (1-5).** Credit to be arranged. Pr., departmental approval and junior standing. Not open to graduate students.
 Students will work under the direction of a staff member on specific problems.

GRADUATE COURSES

(Graduate Standing Required)

- 600. Meat Science (3).** Lec. 3, Lab. 2. Winter. Pr., AH 410 or equivalent.
 A comprehensive study of the chemical, physical, histological and bacteriological properties of meats.
- 603. Methods of Nutrition and Biochemistry (5).** Summer. Pr., AH 419.
 Methodology including chemical, photometric, biological, and microbiological procedures used in nutritional and biochemical investigations.
- 604. Proteins, Amino Acids and Related Nitrogenous Compounds (5).** Spring. Pr., AH 419.
 The nutritional importance of these substances and their relation to growth, reproduction and health of animals.
- 605. Metabolism (5).** Winter. Pr., AH 419.
 Advanced study of metabolic processes.
- 607. Comparative Animal Nutrition (3).** Fall. Pr., AH 408.
 Advanced comparative nutritional requirements in beef cattle, sheep, swine and laboratory animals.
- 608. Advanced Animal Reproduction (5).** Pr., AH 406, ZY 424.
 Physiology and endocrinology of reproduction.

609. Advanced Beef Cattle Production (5). Advanced studies relating to the production of beef cattle.
610. Advanced Swine Production (5). Advanced studies of swine production.
611. Seminar. Credit to be arranged.
612. Genetics of Populations (5). Pr., AH 403. Genetic composition of populations and factors affecting rates of change and conditions of equilibrium.
613. Vitamins (5). Pr., CH 208 and satisfactory courses in animal nutrition. The specific functions and chemistry of the vitamins.
614. Minerals (5). Pr., CH 208 and satisfactory courses in animal nutrition. The specific functions of minerals in animal metabolism.
615. Ruminant Nutrition (5). Pr., ZY 424 and AH 419. Rumen fermentation and the biochemistry of ruminant metabolism.
616. Enzymes (5). Winter. Pr., AH 419. The chemistry, mechanism of action and role of enzymes in metabolism.
617. Microbial Biochemistry (5). Fall. Pr., 5 hours of microbiology and AH 419. The anatomy, growth and metabolism of the bacterial cell with emphasis on the biochemical makeup of the cell and the regulation of its activities; the use of microorganisms for quantitative assays.
618. Current Problems and Practices in Livestock Farming (5). Summer. Intensive studies of new research findings and their application to livestock production on Alabama farms. Primarily for Vocational Agriculture Teachers and County Extension Workers.
619. Experimental Methods (5). Pr., satisfactory courses in statistics. Research methods in the animal sciences including design of experiments, experimental techniques, analysis and interpretation of data, evaluation of research literature and preparation of publications.
620. Experimental Pathology of Metabolic Diseases (5). Winter, by arrangement. Pr., VM 418, satisfactory courses in histology, biochemistry, physiology and general pathology. A comprehensive study of the structural and functional changes associated with metabolic diseases.
690. Special Problems. (1-5 hours. Credit to be arranged.) Conference problems, assigned reading and reports in one or more of the following major fields: (a) animal biochemistry and nutrition, (b) animal breeding and genetics, (c) physiology of reproduction, (d) nutritional pathology, (e) animal production, (f) experimental pathology, (g) histochemistry, and (h) meats.
699. Research and Thesis. Credit to be arranged. Research and thesis may be on technical laboratory problems or on problems directly related to beef cattle, sheep or swine.
799. Doctoral Research and Dissertation. Credit to be arranged.

Architecture (AR)

Head Professor McMinn

Professors Schaeer and Speer

Associate Professors Davis, Doersling, Latta, Mooney, Morrill, and Pfeil

Assistant Professors Carter, Kaip, Pickard, and Williams

Instructors Cameron, Menzies, Rabby, and Stanland

- 110-11. Design Fundamentals (5-5). Lab. 15-15. Techniques and methods in graphic communication, and introduction to design principles.
- 201-2-3. Architectural Design (5-5-5). Lec. 2-2-2, Lab. 9-9-9. Pr., A student must receive a grade of "C" or higher in AT 105, 110, and 111 to be admitted to AR 201. The School reserves the right to refuse advancement to the student regardless of grades if, in the opinion of the faculty, the student does not exhibit sufficient motivation. Principles of spatial composition and structural organization; approaches to architectural design by the analysis of design determinants—9 hours per week in design laboratory. Two hours per week of discussions and laboratory criticism.
- 301-2-3. Architectural Design (5-5-5). Lab. 15-15-15. Pr., AR 203. Coreq., BT 220. Admission only upon recommendation of the Committee on Design. Analysis and solution of buildings of moderate complexity, with emphasis on domestic, civic, and recreational problems; increased attention to construction and finish details. Research, discussions, drawings, models.

360. Appreciation of Architecture (3). General elective. Pr., sophomore standing. (Not open to AR and ID students.) Architectural development with particular attention to American and contemporary examples. Illustrated lectures, readings, essays.
- 361-2-3. History and Theory of Architecture (3-3-3). Pr., AR 203. Cultural institutions of the past and the study of the principles of planning and architectural composition, town planning, and landscape architecture as resulting from these forces and structural knowledge of the time. The Ancient, Medieval, and Oriental cultures. Illustrated lectures, readings, drawings, and reports.
370. Spaces for Living (3). General elective. Pr., junior standing. (Not open to AR and ID students.) Contemporary concepts of design, spatial organization, materials, furnishings, and gardens in relation to all major types of residential architecture. Illustrated lectures, readings, reports.
374. Planning (2). Lec. 2. Principles of city and regional planning. Consideration of the influences which shape urban development.
- 401-2-3. Architectural Design (5-5-5). Lab. 15-15-15. Pr., AR 303, Coreq., BT 313. Buildings of advanced complexity, with increased emphasis on the relation between space organization and the structural system. Research, discussions, drawings, models.
- 461-2-3. History and Theory of Architecture IV-V-VI (3-3-3). Pr., AR 363. Continuation of AR 363. Study of Renaissance, Baroque, Colonial American, and Modern cultures. Illustrated lectures, readings, drawings, and reports.
- 501-2. Architectural Design (5-5). Lab. 15-15. Pr., AR 403. Admission upon recommendation of the Committee on Design. Analysis and design of buildings of advanced complexity, with emphasis on multi-story commercial and institutional projects; group planning and advanced site study. Research, reports, discussions, drawings, models.
503. Architectural Design (7). Lab. 21. Pr., AR 502, AR 512. The development of a major design problem under direction of the Committee on Design. Drawings, models, details, and written explanations, oral presentation for jury consideration.
512. Design Research (2). Pr., AR 501. The selection and comprehensive programming of a terminal problem in architecture to be executed in AR 503.
- 521-22. Professional Practice (5-5). Pr., fifth year standing. Procedures in architectural practice; construction methods, estimation of quantities and costs. Office organization; legal requirements; professional organizations and relations; civic responsibility, professional ethics.
558. Seminar in Contemporary Concepts (5). Pr., AR 463. Current achievements in world architecture with emphasis on broad movements and emerging patterns. Research, directed reading, reports, and discussion.
559. Seminar in Historical Problems (5). Pr., AR 463. Open to students who have shown ability, initiative, and industry in developing individual projects. Research, reports, and drawings under supervision on approved topics.
560. The Architect and Society (2). Pr., 4th year standing. The social, economic, and political factors which have influenced the contemporary expression of architectural design and practice. Analysis of great works and philosophies which led the way to new approaches in design. Appreciation of aesthetics and function as applied to form. Lectures, outside reading and reports.
561. Seminar in Urban Design (2). Pr., 4th year standing. Directed reading and discussion of contemporary developments in urban planning concepts and solutions. Reports and drawings.
562. Seminar in Technological Problems (3). Pr., 4th year standing. Current technological advances in the building industry and evaluation of their impact upon architecture.
563. Seminar in Architectural Literature (2). Pr., 4th year standing. A guided study and discussion of selected readings.
564. Art and Architecture Seminar (3). Pr., 4th year standing. Readings, discussions, and projects on the relation of the graphic and plastic arts to architecture.
571. Honors Program. Credit to be arranged up to 5 hrs. Pr., 4th year standing. Admission only by the Committee on Honors Program. Development of an area of concentration through independent study. Scope of work and its evaluation to be determined by the Committee. May be taken more than one quarter.

Courses specifically required in the Interior Design curriculum (ID)

- 215-16-17. Elements of Interior Design (2-2-2).** Lec. 1, Lab. 3. Pr., AR 111.
The profession of interior design including professional procedures, relationships, ethics, correlation with architecture and other arts. Lectures, readings, discussions and research.
- 305-6-7. Interior Design (5-5-5).** Lab. 15-15-15. Pr., AR 203. Admission upon recommendation of the Committee on Design.
Analysis and solution of interiors of moderate complexity, with emphasis on domestic and commercial problems. Research, discussion, drawings, models.
- 365-6. Period Interiors (2-2).**
The development of interior spaces, furniture, fabrics, and accessories from pre-Renaissance to 1900. Illustrated lectures, readings, reports, and field trips.
- 367. Contemporary Interiors (2).** Lec. 2. Pr., AR 366.
The fundamental aspects of interior design, spatial order and characteristics, furniture and fabric design, from 1900 to date. Illustrated lectures, readings, reports.
- 405-6. Interior Design (5-5).** Lec. 2-2, Lab. 9-9. Pr., AR 307. Admission upon recommendation of the Committee on Design.
Analysis and solution of interiors of advanced complexity, with emphasis on institutional and public problems. Research, discussions, drawings, models.
- 407. Interior Design (7).** Lec. 2. Lab. 15. Pr., AR 406.
The development of a major design problem under the direction of the Committee on Design. Drawings, models, details; oral presentation for jury consideration.
- 408. Interior Design Research (2).** Lec. 1, Lab. 3. Coreq., AR 406.
The selection and comprehensive programming of a terminal problem in interior design to be executed in AR 407.
- 441. Professional Practice (2).** Lec. 1, Lab. 3.
Office procedure and methods for interior designers; the techniques and execution of working drawings for buildings, cabinetry and interior details; specifications. Discussions, drawings, inspections, reports.

Courses specifically required in the Industrial Design curriculum (IN)

- 210. Industrial Design (5).** Lec. 1, Lab. 12. Pr., AR 105, 110, and 111. Admission only upon recommendation of the committee on design (1.00 overall). The problems of visual communication. Perception theory, design fundamentals; color, figure organization, movement and balance, proportion and rhythm.
- 211. Industrial Design (5).** Lec. 1, Lab. 12. Pr., AR 210.
An extension of principles encountered in Industrial Design I. A study and analysis of Industrial Design Fundamentals.
- 212. Industrial Design (5).** Lec. 1, Lab. 12. Pr., AR 211.
Structural and functional relationship of design elements; convenience, utility, safety, maintenance.
- 221. Materials & Technology (5).** Lec. 5. Pr., sophomore standing.
The properties and use of various materials in manufacture and a study of the machine and tool processes used by industry. Survey from the Designer's viewpoint.
- 222. Technical Illustration (5).** Lec. 5. Pr., sophomore standing.
Axonometric drawing, perspective, and freehand graphics, as used by Industrial Designers.
- 223. Industrial Design Methods (5).** Lec. 5. Pr., sophomore standing.
The methods and organizational procedures employed in the analysis and solutions of design problems. Survey of philosophies and theories of design.
- 308. Design Workshop (3).** Lec. 1, Lab. 2. Pr., AR 210.
Modelmaking and creative modeling. Study Models, Presentation Models, Mock-ups, Prototypes.
- 310. Industrial Design (5).** Lab. 15. Pr., AR 212, AR 222, AR 223, EG 105. Admission only upon recommendation of committee on design. (1.00 overall and 1.33 from AR 210, 211, 212.)
Design of machines and instruments. Arrangements of elements in systems.
- 311. Industrial Design (5).** Lab. 15. Pr., AR 310, PS 204.
Design of domestic and office equipment.
- 312. Industrial Design (5).** Lab. 15. Pr., AR 311.
Exhibition and packaging problems.
- 410. Industrial Design (6).** Lec. 2, Lab. 12. Pr., AR 312.
Industrialized building. Building components produced by industrial means.
- 411. Industrial Design (6).** Lec. 2, Lab. 12. Pr., AR 410. Admission only upon recommendation of committee on design. (1.25 overall and 1.50 from AR 310, 311, 312, 410.)
Design or re-design of products of advanced complexity.

- 412. Industrial Design Thesis (6). Lec. 2, Lab. 12. Pr., AR 411.**
 A project involving all design phases; project of the student's own selection and approved by the Committee on Design. Presentation of graphics, models and written explanations, and oral presentation before a Design Jury. The thesis material will be retained by the Department for one year.
- 415. History of Industrial Design (5). Pr., AR 212.**
 Design from the first Industrial Revolution to the present, with emphasis on the relation between design and science, art, technology, and the humanities.
- 565. Seminar in Industrial Design (5). Lec. 5. Pr., fourth year standing.**
 Development of individual projects. Research, design, reports, on approved topics.

Art (AT)

Head Professor Applebee

Professors Abney, Sykes, and Williams

Associate Professors Kettunen and Walker*

Assistant Professors Hatfield, Hiers, Hobbs, Mims,*

Ross, Shelton, and Taugner

Instructors Dingwell, Harper, Mitchell*, and Morrill**

- 105. Drawing I (5). Lab. 15.**
 Representational drawing. Line, light and dark.
- 106. Drawing II (5). Lec. 2, Lab. 9. Pr., AT 105.**
 Emphasis on creativity, composition and pictorial organization. Interpretive drawing.
- 107. Drawing III (5). Lab. 15. Pr., AT 105.**
 Drawing in various media emphasizing the human figure in form and compositional studies.
- 113. Perspective (3). Lec. 2, Lab. 3. Pr., AT 105.**
 Linear perspective. Shadows, Reflections.
- 181. Design Fundamentals I (5). Lec. 2, Lab. 9.**
 Plastic elements. Relationship of the arts. Problems in basic design.
- 182. Design Fundamentals II (5). Lab. 15. Pr., AT 105 and 181.**
 Relationship of materials and techniques to form. Perception theories. Applied problems.
- 205. Figure Drawing I (5). Lab. 15. Pr., AT 107.**
 Drawing from the model in various media with emphasis on proportions, interpretation and expression.
- 211. Lettering (5). Lec. 5. Pr., AT 181.**
 Historical development of letters. Anatomy of letters. Spacing. Drill exercises with pen. Fundamental alphabets and compositions of body matter lettered directly.
- 212. Graphic Processes (5). Lec. 5. Pr., sophomore standing.**
 Printing processes, photomechanical reproduction, copy-fitting, paper manufacture and usage, related subjects.
- 215. Figure Construction (5). Lec. 3, Lab. 6. Pr., AT 205.**
 Lectures deal with form, function and manner of operation of skeletal and muscular parts of the body. Drawing from casts, models, and skeleton.
- 222. Painting I (5). Lab. 15. Pr., AT 106 and 181.**
 Transparent water color. Study of the medium and of picture structure. Exercises in still life, figure and landscape painting.
- 224. Painting II (5). Lab. 15. Pr., AT 106 and 181.**
 Opaque water color. Techniques and properties of the medium. Objective and subjective handling as a further extension and application of the plastic elements.
- 227. Sculpture I (5). Lab. 15.**
 Three dimensional expression. Clay and other media.
- 305. Printmaking I (5). Lab. 15. Pr., Admission only on recommendation of the Committee on Fine Arts.**
 Relief print media. Woodcut, linoleum cut and related techniques.
- 307-8. Figure Drawing II and III (5-5). Lab. 15-15. Pr., AT 205.**
 Drawing from the model in various media, with emphasis on construction, interpretation and expression.
- 317. Packaging (5). Pr., junior standing and AT 211.**
 Types of package design and the materials used. New applications to everyday products.
- 322. Painting III (5). Lab. 15. Pr., AT 222.**
 Introduction to oil painting. Exploiting of materials and techniques with still life and the figure as a means for aesthetic exploration.

* Temporary.

324. Painting IV (5). Lab. 15. Pr., AT 224 and 322. Admission only upon recommendation of the Committee on Fine Arts.
Painting with optional media and subject matter.
327. Sculpture II (5). Lab. 15. Pr., AT 227.
Three-dimensional expression. Emphasis placed on idea, form, and technique.
338. Art History I (5). Pr., sophomore standing.
The chronological development of Western painting and sculpture from pre-historic through modern times as related to the cultural setting. Illustrated lectures.
339. Art History II (5). Pr., AT 338.
An examination of ideas, philosophies common to all periods of art history, and a comparison of periods in terms other than chronological development. Illustrated lectures, readings, drawings, and reports.
342. Elementary School Art (5). Lec. 2, Lab. 8. Pr., junior standing.
Materials and methods for the development of art activities in elementary schools; exercises in expressive drawing, painting, design and simple lettering.
355. Illustration I (5). Lab. 15. Pr., AT 215.
Basic problems in illustration emphasizing both aesthetic and functional aspects. Drawings and designs for line and halftone reproductions.
361. Fashion I (5). Lab. 15. Pr., AT 182, and AT 215.
Drawing the fashion figure, employing basic types of rendering used in fashion advertising.
381. Visual Design I (5). Lab. 15. Pr., AT 182, AT 211, and AT 212. Admission only upon recommendation of the Committee on Design.
Fundamentals of graphic design. Studies of basic type faces. The trademark. Preparation of art copy for reproduction. Applied problems in advertising and editorial layout.
382. Visual Design II (5). Lab. 15. Pr., AT 381.
Italic types. Problems combining copy-fitting with basic illustration. Preparation of color-separation art copy. Creative expression with letter forms. Letterpress and photo-offset production. The poster. Packaging graphics.
383. Visual Design III (5). Lab. 15. Pr., AT 382.
Script lettering. Planned photographic illustration. Creative design as communication. The trade name. Silkscreen production. Research in pertinent art movements. Packaging graphics.
405. Printmaking II (5). Lab. 15. Pr., Admission only upon recommendation of the Committee on Fine Arts.
Intaglio print media. Etching, engraving and related techniques.
406. Printmaking III (5). Lab. 15. Pr., Admission only on recommendation of the Committee on Fine Arts.
Planographic print media. Lithography and experimental techniques.
422. Painting V (5). Lab. 15. Pr., AT 324 and junior standing.
Painting with optional media and subject matter.
423. Painting VI (5). Lab. 15. Pr., AT 422 and junior standing.
Fundamental problems of painting figures. Experimenting with various means of interpreting the figure in both abstract and realistic compositions.
431. Contemporary Art (3). General Elective.
A survey of modern painting, sculpture and industrial design. Illustrated lectures, readings.
- 432-3. Seminar in Art Problems (5-5). Pr., senior standing.
Open to students who have shown ability, initiative, and industry in carrying out individual projects. Research reports, and drawings under supervision on approved topics.
434. Seminar in Art History Problems (5). Pr., senior standing.
Open to students who have shown ability, initiative, and industry in carrying out individual projects. Research, reports, and drawings under supervision of approved historical topics.
442. Art in Education (5). Lec. 3, Lab. 6. Pr., senior standing.
Lectures, reading and research concerning principles and objectives of pertinent phases of Art for the purpose of understanding their significance in teaching at all levels. Emphasis is placed upon creativity rather than technical skill in laboratory experimentation.
456. Illustration II (5). Lab. 15. Pr., AT 355.
Sustained problems in illustration emphasizing both subjective and objective treatments.
462. Fashion II (5). Lab. 15. Pr., AT 361.
Problems in advanced rendering for fashion advertising; figured and textured fabrics, furs, and accessories.
463. Fashion III (5). Lab. 15. Pr., AT 462.
Design of clothing in all categories; historic adaptations; wardrobe color coordination; personality styling.

481. **Visual Design IV (5).** Lab. 15. Pr., AT 383.
Original student alphabet with application. Research in pertinent art movements. The brochure. Newspaper layout. Television project. Three-dimensional display.
482. **Visual Design V (5).** Lab. 15. Pr., AT 481.
Optional problems in graphic design used to extend or improve student portfolios.
496. **Thesis (5).** Lab. 15. Pr., senior standing.
A terminal Art project initiated by the student and accompanied by a written analysis and evaluation. Both problems and written matter will be defended orally by the student before a faculty group.

GRADUATE COURSES

- 605-6-7-8. Graduate Design (5-5-5-5).** Lab. 15-15-15-15.
Advanced programs of creative design in the student's elected field.
- 627. Advanced Sculpture (5).** Lab. 15. Pr., AT 327 and graduate standing.
Aspects of sculptural organization; relief and three-dimensional. Emphasis on idea and technical procedure.
- 641-2-3. Graduate Research in Art Problems I-II-III (5-5-5).**
Research on approved topics in the student's special field. Conferences and reports.
- 699. Research and Thesis.** Credit to be arranged. All quarters. Pr., AT 496 or equivalent.
A major art problem consisting of a sustained single project or a logical sequence of shorter projects. The candidate will be required to conceive and execute a work or works exhibiting pronounced creative ability and technical proficiency. Upon recommendation of the major professor, a written essay may be required to accompany the project. All drawings, paintings, and models connected with this work will be retained by the Department of Art.

Aviation Management (AA)*Head Professor Pitts**Associate Professor Robinson**Assistant Professors Decker, Kiteley, and Townsend*

- 201. Elementary Aeronautics (5).**
Aviation and the basic principles of flight. This course is open to students in all divisions of the University who desire a general and practical knowledge of aviation.
- 202. Aerospace History (3).**
Significant events and accomplishments in man's attempts to move through air and space. Emphasis is placed on activities during the twentieth century.
- 206. Principles of Private Flight (3). Lec. 2, Lab. 3.**
General introduction to flight and preparation for the FAA private pilot written examination. Topics of theory of flight, aircraft and engines, regulation, navigation, meteorology, and aircraft operation and performance covered.
- 207. Private Pilot Flight Training (1). Lab. 3. Coreq., AA 206 or instructor's consent.**
Dual and solo flight instruction and discussion to prepare for FAA Private Pilot Certificate.
- 303. Air Navigation I (5). Lec. 4, Lab. 3. Pr., MH 160.**
Construction of maps and charts; dead reckoning and piloting; solution, application and practice of navigation problems.
- 304. Meteorology (5). Lec. 4, Lab. 3. Pr., sophomore standing.**
An introductory course in Meteorology including a basic understanding of the atmosphere, measurement of meteorological elements and effect of these on the lower atmosphere. Credit may not be earned in both AA 304 and AA 305.
- 305. Aviation Meteorology (5). Lec. 4, Lab. 3. Pr., PS 206.**
A basic study of meteorology and its application to aviation to include computation of data and preparation of weather maps. Weather elements as related to operation of aircraft, computation of data; preparation of weather maps.
- 307. Flight Navigation (5). Lec. 4, Lab. 3. Pr., AA 206, AA 305, or instructor's consent.**
The principles of piloting, dead reckoning, and radio/electronic methods of navigation and related topics as applied to cross-country flight planning.
- 308. Federal Aviation Regulations (3). Pr., sophomore standing.**
All regulations concerning airmen, aircraft, air agencies, operation and traffic rules.
- 309. Aerospace Legislation (3).**
Federal, state and local legislation affecting aviation and space activities.
- 311. Propulsion Fundamentals (5). Pr., PS 206.**
Principles of operation, major components and important features of typical propulsion systems used in aircraft and missiles. Includes an introduction to propulsion systems used for spacecraft.

312. **Guidance and Control Fundamentals (5).** Pr., PS 206.
Basic principles of aircraft and spacecraft guidance and control.
316. **Aircraft Operation and Performance (3).** Lec. 2, Lab. 3. Pr., AA 206, AA 311, or instructor's consent.
Principles of aircraft performance and operations, including powerplants, aircraft systems and equipment, and advanced flight maneuvers required for commercial pilots.
317. **Commercial Flight Training I (1).** Lab. 3. Coreq., AA 313 or instructor's consent.
Continuation of flight training toward a Commercial Pilot Certificate with emphasis on the development of precision and accuracy in all intermediate and advanced flight maneuvers.
318. **Commercial Flight Training II (1).** Lab. 3. Pr., AA 317. Coreq., AA 307 or instructor's consent.
Continuation of flight training toward a Commercial Pilot Certificate with emphasis on cross-country, night, and instrument flying.
319. **Commercial Flight Problems (3).** Lec. 2, Lab. 3. Pr., AA 307 or instructor's consent.
Review of principles of flight, aircraft and engine theory and operation, FAA regulations, navigation, meteorology, and aircraft performance and operation as applied to commercial flying with emphasis on preparation for the FAA commercial written examination.
320. **Commercial Flight Training III (1).** Lab. 3. Pr., AA 318. Coreq., AA 319 or instructor's consent.
Conclusion of flight training for the Commercial Pilot Certificate with training in transition to complex aircraft. A continuation of instrument and night instruction and a review of all maneuvers for the commercial flight test.
401. **Aeronautical Seminar I (1).** Pr., junior standing.
Special problems and current status of the aircraft and related industries.
402. **Aerospace Vehicle Systems (5).** Pr., PS 206.
Design, use and function of typical hydraulic, mechanical and electrical systems used on aircraft and missiles. Includes an introduction to some of the major systems used in space vehicles.
407. **Aircraft Powerplants (5).** Pr., junior standing.
Engine nomenclature and types, cycles of operation, lubrication, fuels, carburetion, ignition and starting systems, engine-propeller performance, introduction to jet propulsion.
416. **Airport Management (5).** Pr., junior standing.
Principles of management; financing the airport; sources of income; establishment of rates for services rendered; problems of equipment and airport maintenance; accounting procedures; legal responsibilities; merchandising.
417. **Airline Operation (5).** Pr., junior standing.
History of airlines; financial structure and sources of capital of airlines; sales, reservations and space control; dispatching and passenger care; determination of tariffs; personal relations; research; public relations.
418. **Air Transportation (5).** Pr., junior standing.
Historical development and present status of air transportation facilities; regulation, state and federal; legal characteristics of air transportation industry; problems and services of commercial air transportation.
419. **Air Traffic Control (5).** Lec. 4, Lab. 3. Pr., junior standing and AA 307.
All facilities used in controlling air traffic with special emphasis on control center and control tower operation.
421. **Principles of Instrument Flight (3).** Lec. 2, Lab. 3. Pr., AA 319 or instructor's consent.
Instruments, FAA regulations, air traffic control procedures, radio navigation, meteorology, and aircraft operation and performance as applied to instrument flying and preparation for the FAA instrument pilot written examination.
422. **Instrument Flight Training (1).** Lab. 3. Pr., AA 320 or instructor's consent.
Flight and flight simulation instructions in the techniques of instrument flying in preparation for the FAA Instrument Pilot Rating.
425. **Aircraft Components (5).** Pr., junior standing.
Design, installation, use, and function of hydraulic, mechanical, and electrical systems and equipment of aircraft.
427. **Multi-Engine Training (1).** Lab. 3. Pr., a valid Private or Commercial Pilot Certificate.
Instruction in the methods and techniques of multi-engine aircraft pilotage. Sufficient ground and flight instruction is given to qualify for the FAA pilot rating of Multi-Engine—Land.

428. **Principles of Flight Instruction (3).** Pr., AA 320.
A study of the principles of teaching as applied to instructing, analyzing, and evaluating flight students with emphasis on preparation for the FAA flight instructor's written examination.
429. **Flight Instructor Training (1). Lab. 3.** Coreq., AA 428 or instructor's consent. Discussion, instruction, and arranged practice in flight instruction in preparation for the FAA Flight Instructor Certificate.

Botany and Plant Pathology (BY)

Professors Lyle, Cairns, Curl, D. Davis, N. Davis, and Marshall

Associate Professors Carter, Clark, Funderburk, Gudauskas, Patterson, and Truelove
Assistant Professors T. Davis, Goslin, Latham, and Shands
Instructors Eldridge and Lee

101. **General Botany (5). Lec. Dem. 5.** All quarters.
The development, structure, and function of plants. Precedes all advanced courses in botany.
102. **General Botany (5). Lec. Dem. 5.** All quarters. Pr., BY 101.
Principal natural groups of plants embracing their particular structure, habits, reproduction, and relationships.
205. **Pharmaceutical Botany (5). Lec. 4, Lab. 2.** Fall, Winter, Spring.
A first course in Botany, restricted to Pharmacy students, includes fundamental concepts of plant life. Various plant groups are studied and the general structure, metabolism and growth discussed. Macroscopic and microscopic examination of plant organs is made with observations on particular substances assimilated in plants that are of interest to the pharmaceutical industry.
306. **Fundamentals of Plant Physiology (5). Lec. 3, Lab. 4.** Pr., BY 101, CH 203 or 207 or equivalent.
General aspects of fundamental life processes of plants involving physiological, structural, and environmental relationships.
308. **Plants and Man (3). Lec. 3.** Summer. General Elective.
The botanical characteristics of most categories of plants including their kinship, origin, past and present distribution, and various ways utilized, as timbers, fruits and other foods, fibers, forage, ornamentals, drugs, etc. Local field trips will be made. (Restricted to students who have had no more than 5 hours credit in botany.)
309. **General Plant Pathology (5). Lec. 3, Lab. 4.** Winter, Spring. Pr., BY 101-2.
Nature cause, and control of plant diseases illustrated by studies of the more common diseases of cultivated crops.
310. **Forest Pathology (5). Lec. 3, Lab. 4.** Winter, Spring. Pr., BY 101-2.
Diseases of trees in forests, parks, streets, and nurseries, as well as the more important fungi causing rots of timber and its products.
401. **Biological Statistics (5). Lec. 4, Lab. 2.** Fall, Spring odd years. Pr., MH 122 or MH 160 and junior standing.
Basic concepts of experimental statistics, distributions, confidence limits, tests of significance, analysis of variance, linear correlation and regression. For advanced undergraduates and as a beginning course for graduate students in biological sciences.
406. **Systematic Botany (5). Lec. 3, Lab. 4.** Spring and Summer. Pr., BY 101-2 and junior standing.
Identification and classification of flowering plants. Field trips will be made.
409. **Marine Botany (6). Lec. 5, Lab. 12.** Summer. Pr., Ten hours of biology, including introductory botany, or consent of instructor.
Survey, based upon local examples, of the principal groups of marine algae and maritime flowering plants, involving their structure, reproduction, distribution, identification, and ecology. Restricted to participants in the Gulf Coast Research Laboratory Teaching Session.
410. **Aquatic Plants (5). Lec. 3, Lab. 4.** Summer. Pr., BY 101-2 and junior standing.
Identification and study of those plants found in or associated with the fresh water features of Alabama. Emphasis will be on plants which have particular relationships to wildlife management or fish culture. Field trips will be taken and a plant collection required.
411. **Phycology (5). Lec. 2, Lab. 6.** Spring. Pr., BY 101-2 and junior standing.
The identification, growth, reproduction, distribution, evolution and economic importance of the algae. Field trips will be made.
412. **Advanced Plant Pathology I (5). Lec. 2, Lab. 6.** Fall. Pr., BY 309, 310 or equivalent and junior standing.
Techniques and methodology used in the study of plant pathogens, particularly fungi, bacteria, viruses, and nematodes, and the diseases they cause.

413. General Plant Ecology (5). Lec. 3, Lab. 4. Fall and Spring. Pr., BY 306 and junior standing.
Natural vegetation, environment, and interrelationships between the two with primary emphasis on the Southeastern United States. Field trips will be made.
414. Plant Morphology (5). Lec. 3, Lab. 4. Spring. Pr., BY 102 and junior standing.
Morphology of the principal plant groups concerning their structure, reproduction, and evolutionary relationships.
415. Developmental Plant Anatomy (5). Lec. 3, Lab. 4. Winter. Pr., BY 102 and junior standing.
Comparative anatomy of vascular plants with emphasis on structures and developmental relationships.
416. Biological Microscopy, Microtechnique, and Photography (5). Lec. 2, Lab. 6. Pr., permission of instructor.
Various forms of optical microscopy; micromanipulation; micrometry; drawing with the microscope. Microobservation; whole-mounts; dissociation; sectioning by freezing and embedding techniques. Vital, in-situ, smear, squash, and section staining. Macro- and micro-photography with still, cine, and lapse-time equipment. Photographic illustration for publication and lantern slide presentation.
419. Principles in Plant Disease Control (3). Lec. Dem. 4. All quarters. Pr., BY 309 and graduate standing.
Designed to acquaint the student with such principles of plant disease control as protection, exclusion, eradication, and resistance. The control of important plant pathogens will be considered by each method. Emphasis will be placed on chemical control with antibiotics, fumigants, and fungicides.
420. Weed Identification and Control (5). Lec. 3, Lab. 4. Spring. Pr., BY 101 and junior standing.
Recognition of the more noxious weeds, their ecology, habit of growth, dissemination and the evaluation of the various methods of control.
430. Plant Nematology (5). Lec. 2, Lab. 6. Winter. Pr., BY 309, ZY 101 or permission of instructor and junior standing.
Various roles of nematodes in relation to plant diseases caused by the nematodes and other pathogens. Identification of the plant-nematodes nature of pathogenicity; principles and practices of control; recent advances in phytonematology.
435. Plant Biology (5). Lec. 3, Lab. 4. Summer. Pr., Teaching experience and junior standing.
Principles of biology as they apply particularly to the development, anatomy, and physiology of higher plants. Restricted to participants in the NSF Summer Institute of Biology. Will be offered in separate section to other qualified students upon sufficient demand.

GRADUATES ONLY, MAJOR OR MINOR

601. Biological Statistics II (5). Lec. 4, Lab. 2. Winter. Pr., BY 401 or equivalent.
Analysis of variance, randomized block, Latin square and split plot designs, factorials, analysis of covariance, and multiple regression.
602. Least Squares Analysis of Experiments (5). Lec. 4, Lab. 2. Spring even years. Pr., BY 401 and BY 601 or equivalent.
Analysis and interpretation of experimental data by least squares procedures; general linear models and hypotheses; weighted regression; irregular two-factor design.
604. Advanced Plant Physiology I (5). Lec. 3, Lab. 4. Fall. Pr., BY 306 and 10 hours of organic chemistry.
Molecular biology and plant metabolism; a correlation of the fine structures of the cell with metabolic pathways occurring therein.
605. Advanced Plant Physiology II (5). Lec. 3, Lab. 4. Winter. Pr., BY 604 or equivalent.
Water relations and mineral nutrition. Internal and external factors affecting the absorption, translocation, utilization, and loss of water and mineral elements by green plants.
606. Advanced Plant Physiology III (5). Lec. 3, Lab. 4. Spring. Pr., BY 604 or equivalent.
Plant growth. A review of literature and laboratory methodology of plant physiological subject matter in the areas of plant growth regulators, mode of action of growth regulators, and factors affecting plant growth.
608. Advanced Systematic Botany (5). Lec. 2, Lab. 6. Spring. Pr., BY 406.
Intensive study of special groups of plants.
609. Mycology (5). Lec. 2, Lab. 6. Fall. Pr., BY 101-2 and consent of instructor.
Systematic survey of the fungi with aspects of morphology included. Emphasis will be on the economically important fungi.

611. **Ecology and Soil Fungi (5).** Lec. 2, Lab. 6. Fall odd years. Pr., BY 309 or 310, BY 609.
Quantitative and qualitative consideration of the microbial population of the soil. Relation of physical environment, antagonistic microorganisms, and higher plants on growth and survival of soil fungi. Emphasis will be on methodology for studying soil microflora and plant disease relationships.
612. **Physiology and Biochemistry of Fungi (5).** Lec. 3, Lab. 4. Winter. Pr., 10 hours of microbiology and 5 hours of biochemistry.
Biochemical activities of fungi as related to their nutrition, growth, reproduction and fermentative abilities.
613. **Experimental Plant Ecology (5).** Lec. 2, Lab. 6. Pr., BY 413. Summer.
Field course covering the methods of obtaining quantitative data on the structure and composition of plant communities as well as the use of instruments for evaluating the environment.
615. **Morphology of Angiosperm (5).** Summer. Lec. 3, Lab. 4. Pr., BY 414.
Principles of angiosperm reproduction with emphasis on structure and evolution.
616. **Cytology and Cytogenetics (5).** Lec. 3, Lab. 4. Winter. Pr., ZY 300.
Cell structure and function with emphasis on cell reproduction and factors contributing to the evolution of organisms.
617. **Phytopathology (5).** Lec. 3, Lab. 4. Winter. Pr., BY 309 or 310, VM 495.
To acquaint students with viruses as plant pathogens and the diagnosis and control of diseases caused by them. Laboratory will involve methodology in the transmission, isolation, and characterization of viruses which infect plants.
618. **Clinical Plant Pathology (5).** Lec. and Lab. 8. Summer or Fall. Pr., BY 412 or equivalent or consent of instructor.
Identification, epidemiology, etiology, and control of the major diseases on various kinds of economic plants, to be selected on the basis of current needs of the students. Subject matter to be presented by various specialists within the department.
619. **Advanced Plant Pathology II (5).** Lec. 3, Lab. 4. Spring. Pr., BY 412 or equivalent with consent of instructor.
Biological significance of etiology, epiphytology, and host-parasite relations in plant diseases. Classical and current theory will be considered in relation to concepts and problems in plant pathology.
620. **Chemical Weed Control (5).** Lec. 3, Lab. 4. Fall or Summer, odd years. Pr., BY 306, BY 406 or 420.
Application, mode of action, physiological relationships, recent advances, and special weed problems.
625. **Special Problems.** Credit to be arranged.
A. Cytology; B. Ecology; C. Morphology; D. Mycology; E. Nematology; F. Pathology; G. Physiology; H. Taxonomy; I. Chemical Weed Control; J. Marine Botany; K. General Botany Teaching.
635. **Biological Processes (5).** Lec. 5. Summer. Pr., BY 435, teaching experience, and graduate standing.
Acquaints the secondary school teacher with some of the fundamental life-processes, and illustrates ways in which each of these affects the affairs of man. Restricted to participants in the NSF Summer Institute of Biology but will be offered in a separate section to other qualified students upon sufficient demand.
636. **Microbiology (5).** Lec. 3, Lab. 4. Summer. Pr., teaching experience.
Structure and activities of microorganisms, their distribution and cultivation. The algae, fungi, bacteria, and protozoa are considered particularly as they relate to animal and plant disease, food, industrial uses, sanitation, and immunization. Restricted to participants in the NSF Summer Institute of Biology. Will be offered in separate section for other qualified students upon sufficient demand.
640. **Departmental Forum (1).** Fall, Winter and Spring. Required of all majors, open to all minors.
Discussions concerning current topics in the various sciences and related fields.
641. **Seminar in Plant Physiology (1).** Fall, Winter, and Spring. May be taken more than once for credit.
650. **Nuclear Science in Agriculture (5).** Lec. 3, Lab. 6. Spring. Pr., graduate standing with research experience.
Role of nuclear science in agricultural research with training in the use of radioisotopes and familiarization with the possibilities, limitations, and necessary safety precautions.
699. **Research and Thesis.** Credit to be arranged. May be taken more than one quarter.
799. **Doctoral Research and Dissertation.** Credit to be arranged.

Building Technology (BT)*Head Professor Orr**Professor Marty**Associate Professor Darden**Assistant Professors Faulkner and Hays**Instructor Fretwell*

- 104. Introduction to Building (6). Lec. 2, Lab. 12.**
Survey of the building industry; building procedures; study of plans and details; use of drawing tools; elements of estimating. Lectures, readings, drawings.
- 105. Drawing and Projections (6). Lec. 2, Lab. 12.**
Application of geometry to orthographic, isometric, cavalier, cabinet, and perspective projections. Exercises in working drawings.
- 106. Materials and Construction (5). Pr., BT 104.**
Structural and finish materials and assembly systems used in buildings. Lectures, reports, readings, drawings.
- 220. Mechanics of Structures (5). Pr., PS 205, MH 263.**
Principles of mechanics as applied to building construction, graphic statics; resolution of external forces; analysis of trusses; centroids; moments of inertia; friction. Lectures, demonstrations, problems.
- 311-2-3. Structures I-II-III (3-3-3). Pr., BT 220.**
Statically determinate structures including beams, columns, trusses, struts and tension members. Shear and bending moments, torsion, slope and deflection. Problems worked in wood, reinforced concrete, steel and other structural materials. Lectures, research and problems.
- 321. Construction Problems I (5). Lab. 15.**
Solution of practical problems of the type normally encountered in the erection of buildings. Layouts, design of formwork and scaffolding. Material storage and handling. Job organization. Demonstrations, research and drawings.
- 367-8-9. History of Building I-II-III (3-3-3). Pr., BT 106.**
An analysis of the development and use of construction methods and materials showing the effects of this development on building form from ancient to contemporary times. Illustrated lectures, readings, reports and drawings.
- 411-2-3. Structures IV-V-VI (3-3-3). Pr., BT 313.**
Continuation of Structures I-II-III in the field of statically indeterminate structures. Consideration of lateral stability in buildings. Design of foundations. Lecture, research and problems.
- 422. Construction Problems II (5). Lab. 15. Pr., BT 312 and 321.**
Continuation of BT 321; solution of problems taken from working drawings, specifications, shop drawings and contract documents. Discussions, research, estimates, computations, drawings.
- 433-4. Construction Methods and Estimating I-II (5-5). Pr., BT 106 and 312.**
Material quantities; estimating; builder's organization and procedure; job records; builder's liability; labor relations; safety precautions; critical path analysis; project management. Preparation of quantity lists from working drawings; lectures, problems.
- 452-3. Building Equipment I-II (3-3). Pr., PS 206.**
Description and analysis of heating, air conditioning, water supply, plumbing, electrical wiring, motors, elevators, and illumination as related to buildings. Lectures, demonstrations, readings, problems.
- 490. Building Construction Thesis (7). Lab. 21. Pr., BT 422, 434 and 4th year standing, third quarter. Admission only upon recommendation of the Faculty Thesis Committee.**
Preparation of detailed cost estimates and construction program of a building, selected with departmental approval; report to include description of building and site, list of quantities of materials, unit prices of materials and labor, detailed cost sheets; bid and contract forms, construction schedule, and methods required. (Candidate will defend thesis orally before staff and guest specialists.)
- 521-2-3. Advanced Structures I-II-III (5-5-5). Pr., BT 413.**
Theory and practical design of complex and long span structures, both in steel and reinforced concrete. Multiple story buildings, towers, arches, vaults, domes, thin shell systems, foundations. Lectures, research and problems.
- 541. Building Equipment III (2). Lab. 6. Pr., BT 453 and AR 403.**
A continuation of Building Equipment I and II in selected laboratory problems.

GRADUATE COURSES

- 605-6-7. Graduate Research in Building (5-5-5). All quarters.**

Independent investigation and reports on topics selected by the student with approval of the instructor.

- 621-2-3. Graduate Construction Design (5-5-5). Lab. 15-15-15. All quarters. Pr., BT 523.**
 The analysis and solution of complex problems in construction design, with particular emphasis upon practical and economical application to a selected building. Conferences, working drawings, scale models.
- 699. Research and Thesis. Credit to be arranged. May be taken more than one quarter.**
 The analysis and solution of an advanced problem in building. The choice, scope and program of study for the problem must be submitted by the candidate for approval of the department staff during the first week of the quarter.

Chemical Engineering (CN)

*Professors Wingard and Hsu**

*Associate Professors Moore, Hirth, and Vives***

*Assistant Professors Askew and Taylor**

*Instructor Hammett****

- 101. Chemical Engineering Fundamentals I (1). Lab. 3.**
 A work shop in the use of the slide rule, blue print reading, lettering, graphs and graphing, and interconversion of units.
- 200. Digital Computers (2). Lec. 1, Lab. 3.**
 Workshop on digital computer programming in the area of chemical engineering.
- 201. Chemical Engineering Fundamentals II (3). Pr., MH 161, PS 201.**
 Chemical engineering and process calculations. Includes problems relating to the behavior of ideal gases, humidity and material balances.
- 202. Chemical Engineering Fundamentals II (5).**
 The material covered in this course comprises that covered in CN 201 and CN 300. The course is open only to junior college transfer students.
- 300. Process Calculations I (3). Pr., CN 201.**
 Continuation of CN 201. Includes problems relating to the thermodynamics, thermochemistry, and more comprehensive problems in fuels, combustion, and chemical metallurgical and petroleum processes.
- 301. Process Calculations II (3). Pr., CN 300.**
 Calculations involving fuel, combustion, chemical, metallurgical, and petroleum processes, and basic thermodynamic properties and relationships.
- 322. Chemical Process Industries (4). Pr., CH 304.**
 Major inorganic and organic chemical process industries including raw materials, processing methods, and markets.
- 324. Fluid Mechanics (4). Pr., MH 264, PS 203.**
 Fluid mechanics, including resistance of immersed bodies and friction in flow through beds of solids.
- 326. Heat Transfer (3). Pr., CN 324.**
 Principles of heat transfer, including conduction, convection, and radiation. Heat transfer equipment design methods. Evaporation as a unit operation.
- 326L. Heat Transfer Laboratory (2). Lab. 6. Coreq., CN 326.**
 Laboratory experiments in fluid flow, heat transfer and evaporation.
- 401. Chemical Engineering Economics (2). Pr., junior standing.**
 Economic factors affecting the design, operation, and income of industrial chemical processing, including cost estimation and feasibility studies.
- 402. Heat Transfer for Metallurgical Engineers (5). Lec. 5. Pr., MH 361, PS 202.**
 Thermal measurements, steady and unsteady state conduction, radiation, furnace design.
- 423. Unit Operations (3). Pr., CN 326.**
 Theory and mechanisms of diffusion, humidification and dehumidification, drying, size reduction, filtration and materials handling.
- 423L. Unit Operations Laboratory (2). Lab. 6. Coreq., CN 423.**
 Laboratory experiments in drying, air conditioning operations, filtration, crushing, grinding and size separation.
- 424. Mass Transfer (3). Pr., CN 423.**
 Theory and mechanisms of distillation, absorption and extraction.
- 424L. Mass Transfer Laboratory (2). Lab. 6. Coreq., CN 424.**
 Laboratory experiments in distillation, absorption and extraction.

* One-third time Engineering Experiment Station.

** On leave.

*** Temporary.

426. **Engineering Metallurgy (5).** Lec. 4, Lab. 3. Pr., CH 408 and senior standing. Internal structure of solid state metals as related to physical properties, effect of mechanical work and heat. Theory of alloys with emphasis on production, working and heat treatment of steels and certain non-ferrous alloys.
427. **Extractive Metallurgy (5).** Pr., CH 206 and junior standing. The recovery of the most important metals from their ores, refining and correlation of purity with commercial uses. Included will be processes in the fields of hydro-, electro-, and pyrometallurgy along with such subtopics as ore beneficiation, electrolytic equipment, furnaces and pyrometry.
430. **Computer Principles (2).** Pr., MH 361. The basic principles of analog and digital computer theory, and applications to chemical engineering.
431. **Computer Applications (2).** Lec. 1, Lab. 3. Pr., CN 430, CN 424, CN 490. Solution of engineering problems on the digital computer. Required a working knowledge of computer programming.
432. **Instrumentation and Control (4).** Lec. 3, Lab. 3. Pr., MH 361, PS 203, senior standing. Principles of automatic feedback control, process dynamics, selection of instrumentation and determination of control settings.
437. **Process Engineering (4).** Lec. 2, Lab. 6. Pr., senior standing and CN 322. Coreq., CN 424. Semi-independent work of individuals and small groups. The subject matter relates to the study of the scientific literature, laboratory operations designed to develop a satisfactory process, and pilot plant development and operation; including cost analyses, a market study, and the writing of reports. Principles of report writing are stressed.
440. **Nuclear Engineering (5).** Pr., senior standing in science or engineering and B average except by special permission. Atomic physics and nuclear reactions. Nuclear reactor principles, design, and engineering including radiation, shielding, instrumentation, and heat transfer.
484. **Chemical Engineering Plant Design (4).** Lec. 2, Lab. 6. Pr., CN 437 and senior standing. The major responsibility is placed upon individuals or small groups for the optimum design, choosing between alternates, selection of equipment, and the calculation of the required sizes, plant layout, cost analyses and the writing of reports. Comprehensive problems are assigned which usually include heat, materials and economic balances, unit operations and processes, kinetics, and thermodynamics. Some consideration also is given to statistics.
490. **Applied Thermodynamics (5).** Pr., senior standing, CN 301. Thermodynamic properties of fluids, the expansion and compression of fluids, the thermodynamics of solution, physical equilibrium and chemical equilibrium, and important applications to chemical engineering.
491. **Kinetics (4).** Pr., senior standing, CN 490. A study of the rates of homogeneous, heterogeneous, and catalytic reactions, and applications of the rates to the organic process industries.

COURSES PRIMARILY FOR GRADUATE STUDENTS

601. **Transport Phenomena I (5).** Pr., CN 423, CN 424 or equivalent. Momentum and energy transport, mechanisms of viscosity and thermal conductivity, velocity and temperature distribution in laminar and turbulent flow, equations of change, interphase transport, macrascopic balances.
602. **Transport Phenomena II (5).** Pr., CN 601. A continuation of CN 601.
603. **Transport Phenomena III (5).** Pr., CN 602. Mass transport, mechanism of diffusivity, concentration distribution in solids, laminar and turbulent flow, multi-component systems.
604. **Chemical Engineering Thermodynamics I (5).** Pr., CN 490 or equivalent. Emphasis on properties of actual gases, energy functions and engineering applications, molecular theory of fluids, complex non-ideal systems.
605. **Chemical Engineering Thermodynamics II (5).** Pr., CN 604. Emphasis on physical and chemical equilibria for complex systems statistical treatment of thermodynamic relations, non-equilibrium thermodynamics.
606. **Chemical Engineering Kinetics I (5).** Pr., CN 491 or equivalent. Analysis of complex chemical reactions, reaction mechanisms, homogeneous and heterogeneous catalysis, effect of various physical factors, reaction scale-up, industrial reactors.
609. **Petroleum Refining Engineering (5).** Pr., CH 304, CN 424 or equivalent. Composition of petroleum, evaluation of oil stocks, refinery processes, design of refinery equipment, corrosion problems, treatment of petroleum products, petrochemicals, economic aspects of petroleum industry.

- 610. Advanced Physical Metallurgy (5).** Lec. 4, Lab. 3. Pr., CN 426. Heat treatment of ferrous and non-ferrous metals including microscopic studies. Recent developments also are included. This course is open by special permission to seniors who have credit for CN 426.
- 611. Advanced Kinetics and Principles of Reactor Design (5).** Pr., CN 605.
- 612. Process Dynamics and Control I (5).** CN 432 or equivalent. Control responses, applications of Laplace transforms, control system design, frequency response, distributed parameters, linearizing procedure.
- 613. Process Dynamics and Control II (5).** Pr., CN 612. Analysis of process dynamics stability analysis, optimizing control, data handling, digital computer control.
- 614. Heat Transmission I (5).** Pr., graduate standing. Dynamics of chemical engineering processes and operations, such as reactors, heat exchangers, flow-storage systems, and diffusional operations. This course deals primarily with the mathematical study of automated systems and some of the aspects of computer control.
- 615. Heat Transmission II (5).** Pr., graduate standing. Boiling heat transfer, condensing vapor, natural convection, extended surfaces, radiation heat transfer, packed bed, exchanger design analysis.
- 631. High Polymer Science and Technology (5).** Pr., CH 304, CN 424 or equivalent. Structure of polymers, molecular forces and properties, polymer formation and modification, kinetics of polymerization, rheology of polymers, specific polymers such as fibers, rubbers, coatings, and adhesives, fabrication method.
- 650. Special Topics and Chemical Engineering (credit TBA).** Special topics covering in depth scientific industries or types of unit processes may be given as directed reading, lectures or a combination of both. Maximum total credit 5 hours.
- 670. Seminar (1).** Pr., graduate standing. May be taken from one to five quarters for credit.
- 699. Research and Thesis.** Credit to be arranged.

Chemistry (CH)

Professors Baker, Capps, Kosolapoff, Land, Melius, Nichols, Price, Saunders, Stevens, and Ward

Associate Professors Barksdale, Dinius, Peterson, and Ziegler
Assistant Professors Mountcastle, Neely, and Teggins

Credit in CH 103-4-5 and CH 206 toward a degree is subject to completion of the corresponding laboratory course, i.e., 103L, 104L, 105L, and 206L. Students not qualified to take CH 103 are required to complete CH 102 before taking CH 103.

- 102. Introductory College Chemistry (3).** Each quarter. Pr., MH 107. Coreq. MH 121 or MH 160 and departmental approval.
An introductory course in chemistry.

- 103-4. General Chemistry (4-4).** Each quarter. Pr., for CH 103, MH 107 or coreq. MH 121 or MH 160 and departmental approval. (CH 103 Pr., for CH 104.)
A comprehensive course for non-chemistry majors embracing a detailed study of the fundamental principles and concepts of chemistry.

- 103L-104L. General Chemistry Laboratory (1-1).** Lab. 3.
These courses must be taken concurrently with the corresponding lecture course.

- 105. General Chemistry (3).** A continuation of CH 104.
For non-chemistry majors devoted to a study of the chemistry of the elements according to the analytical groups. Ionic equilibria, solubility product, and related phenomena and their use for the separation and identification of the group constituents.

- 105L. General Chemistry Laboratory (2).** Lab. 6.
Laboratory work in qualitative analysis. Must be taken concurrently with the corresponding lecture course.

- 111. General Chemistry (5).** Lec. 4, Lab. 3. Pr., MH 107 or Coreq., MH 160, or MH 121.
For chemistry majors and others in closely related areas.

- 112. General Chemistry (5).** Lec. 4, Lab. 3. Pr., CH 111 or CH 103.
Continuation of CH 111.

- 113. General Chemistry (5).** Lec. 3, Lab. 6. Pr., CH 104 or CH 112.
Continuation of CH 112. Laboratory work covers qualitative analysis.

- 203. Organic Chemistry (5).** Pr., CH 104.
Fundamentals of organic chemistry. Designed for students in Home Economics, and others.

204. Analytical Chemistry (3). Lec. 3. Each quarter. Pr., CH 105 and CH 105L or CH 113.
Theory and application of gravimetric, volumetric and colorimetric chemical analysis.
- 204L. Analytical Chemistry Laboratory (2). Lab. 8. Each quarter. Pr., or Coreq. CH 206.
Analytical techniques applied to the analysis of ores and minerals.
205. Analytical Chemistry (5). Lec. 3, Lab. 6. Pr., CH 204.
Fundamental concepts used in analytical chemistry and observed in the laboratory via gravimetric analysis and separation techniques.
207. Organic Chemistry (5). Lec. 4, Lab. 3. Each quarter. Pr., CH 104.
This course together with CH 208, will meet the needs of students in Laboratory Technology, Pre-Medicine, Pre-Dentistry, Pre-Veterinary, Pharmacy and students in other Biological Sciences.
208. Organic Chemistry (5). Lec. 3, Lab. 6. Each quarter. Pr., CH 207.
Continuation of CH 207.
301. Biochemistry (5). Lec. 4, Lab. 3. Pr., CH 208.
Especially designed for students in Pre-Medicine and Pharmacy.
303. Organic Chemistry (5). Lec. 4, Lab. 3. Pr., CH 113.
Organic chemistry covering nomenclature, group reactions, important theories and concepts relating to aliphatic and aromatic compounds, designed primarily for chemistry majors.
304. Organic Chemistry (5). Lec. 3, Lab. 6. Pr., CH 303.
Continuation of extension of CH 303.
305. Organic Chemistry (5). Lec. 3, Lab. 6. Pr., CH 304.
Continuation and extension of CH 303-304, including heterocyclic compounds and many classes of compounds of interest in the field of biochemistry.
316. Physical Chemistry (5). Pr., MH 112, CH 105 and PS 205.
A one-quarter course for pre-medicine students.
401. Chemistry for High School Science Teachers (5). Lec. 4, Lab. 3. Summer. Pr., teaching experience.
404. Organic Analysis (Qualitative) (5). Lec. 3, Lab. 6. Pr., CH 305 or equivalent and junior standing.
After performing identification tests on known compounds, the student identifies pure organic unknowns, and separates and identifies the compounds of mixtures. Graduate students will identify more unknowns than required of undergraduates.
407. Physical Chemistry (5). Lec. 4, Lab. 3. Pr., MH 264, CH 205 or CH 206, PS 203, and junior standing.
A discussion of the more important theories and laws of physical chemistry.
408. Physical Chemistry (5). Lec. 4, Lab. 3. Pr., CH 407, and junior standing.
Continuation of CH 407.
409. Physical Chemistry (5). Lec. 4, Lab. 3. Pr., CH 408, and junior standing.
Extension of principles studied in CH 407-8 with special reference to electro-chemistry.
410. Intermediate Inorganic Chemistry I (5). Lec. 5. Pr., CH 408 and junior standing.
Atomic structures, valence bonding and periodic properties of the elements.
411. Intermediate Inorganic Chemistry (5). Lec. 3, Lab. 6. Pr., CH 410 and junior standing.
Synthesis and purification of typical inorganic compounds.
412. Chemical Thermodynamics (5). Pr., CH 408, and junior standing.
Basic laws governing changes in energy in gases, liquids and solids.
413. Analytical Chemistry (5). Lec. 3, Lab. 6. Pr., CH 409, and junior standing.
Fundamental concepts used in instrumental analytical chemistry and as observed in the laboratory via spectrophotometric, electroanalytical and chromatographic techniques.
- 418-19-20. Biochemistry (5-5-5). Lec. 4, Lab. 3. Pr., CH 208, and junior standing.
A standard year-course in the principles of biochemistry.

GRADUATE COURSES

601. Selected Topics in Chemistry (5). Lec. 4, Lab. 3. Summer. Pr., CH 401 or its equivalent.
Modern topics in general chemistry and short review of organic chemistry.
610. Advanced Inorganic Chemistry (5). Spring quarter. Pr., CH 410 or equivalent.
Selected groups of inorganic compounds considered from a modern physicochemical viewpoint emphasizing their chemical and physical properties, rates of conversion one into another, molecular structure and valence relationships. Compounds of the metallic elements.

- 611.** Advanced Inorganic Chemistry (5). Winter quarter. Pr., CH 410 or equivalent. The same type of treatment as given in CH 610, but considering mainly compounds of non-metallic elements.
- 612.** Inorganic Preparations (5). Summer quarter, even years. Pr., CH 610 or CH 611. The preparation of typical inorganic compounds illustrating special and more advanced techniques.
- 614.** The Chemistry of Coordination Compounds (5). Spring quarter, even years. Pr., CH 410 or equivalent. Complex inorganic compounds with emphasis on early and modern developments, isomerism, chelation and methods of determining formation constants.
- 616.** Inorganic Reaction Mechanisms (5). Spring quarter, odd years. Pr., CH 410 or equivalent. Factors affecting the rates of inorganic reactions in solution.
- 620-21.** Organic Chemistry (5-5). CH 620 in Fall quarter and CH 621 in Winter quarter. Pr., CH 305 or equivalent.
- 622.** Quantitative Organic Analysis (5). Lec. 2, Lab. 6. Spring quarter, even years. Pr., CH 621 or equivalent. General methods for the quantitative determination of elements and functional groups in organic compounds.
- 623.** Heterocyclic Compounds (5). Summer quarter, even years. Pr., CH 621 or equivalent. Organic compounds containing heterocyclic ring systems.
- 624.** Element-Organic Compounds (5). Fall quarter, odd years. Pr., CH 621 or equivalent. Organic chemistry of Groups III, IV and V elements.
- 625.** Organic Nitrogen Compounds (5). Fall quarter, even years. Pr., CH 621 or equivalent. Organic compounds containing nitrogen.
- 626.** Polymers (5). Spring quarter, odd years. Pr., CH 621 or equivalent. Polymeric substances and some of their practical applications.
- 627.** Special Topics in Organic Chemistry (5). Summer quarter, odd years. Pr., CH 621 or equivalent. A selection of modern topics in organic chemistry.
- 630-31.** Advanced Physical Chemistry (5-5). Fall quarter for CH 630 and Winter quarter for CH 631. Pr., CH 409 and CH 630. Pr., for CH 631. Topics generally considered include kinetic theory of matter, modern theories of the structure of matter, generalized thermodynamics, relation of molecular structure to spectroscopic and thermodynamic properties, and kinetics of chemical reactions.
- 632.** Relation Between Structure and Properties of Chemical Substances (5). Fall quarter, even years. Pr., CH 631. Established relationships that exist between structures of organic and inorganic compounds and physical properties which are relatively easy to determine. The principal aim is the demonstration of the fundamental relation of structure of compounds and electronic configurations.
- 633.** Chemical Kinetics (5). Fall quarter, odd years. Pr., CH 631. The mathematics and characterization of chemically reacting systems include discussions of the collision theory, the transition state theory, unimolecular reactions in condensed phases, behavior of nonstationary-state systems, and photochemistry.
- 634.** Heterogeneous Equilibria (5). Spring quarter, even years. Pr., CH 631. Chemical and physical equilibria in heterogeneous systems.
- 636.** Statistical Thermodynamics (5). Winter quarter, even years. Pr., CH 631. Statistical approach to thermodynamics and chemical equilibrium.
- 637.** Introduction to Quantum Chemistry (5). Winter quarter, odd years. Pr., CH 631. Quantum theory as applied to chemical problems.
- 638.** Molecular Spectroscopy (5). Spring quarter, odd years. Pr., CH 631. Theory and Application of Optical and Magnetic Resonance Spectroscopy.
- 640.** Carbohydrates (5). Winter quarter, even years. Pr., CH 418 or its equivalent. The chemistry of the mono- and polysaccharides.
- 641.** Amino Acids and Proteins (5). Fall quarter, odd years. Pr., CH 418 or its equivalent. Chemistry of the amino acids and proteins.

642. **Lipids (5).** Summer quarter, even years. Pr., CH 418 or its equivalent. Chemistry of the lipids and their biological significance.
643. **Enzymes (5).** Fall quarter, even years. Pr., CH 419 or its equivalent. Physical and chemical properties and mechanisms of action of enzymes and their role in metabolic reaction.
644. **Intermediate Metabolism (5).** Winter quarter, odd years. Pr., CH 419 or its equivalent. Metabolism of the carbohydrates, lipids, and amino acids.
645. **Biochemical Research Techniques (5).** Lec. 2, Lab. 6. Summer quarter, odd years. Pr., CH 420 or its equivalent. To acquaint the graduate students in chemistry, biochemistry and the biological sciences with the modern techniques used in biochemistry.
650. **Analytical Chemistry (5). Lec. 2, Lab. 8.** Fall quarter. Pr., CH 409. Analytical application of physical-chemical measurements concerned primarily with electrical properties.
651. **Analytical Chemistry (5). Lec. 4, Lab. 3.** Spring quarter. Pr., CH 409. Analytical application of chemical spectroscopy. Applying techniques of ultra-violet, visible infrared, etc., and absorption analysis.
652. **Theories and Current Topics of Analytical Chemistry (5).** Winter quarter, odd years. Pr., CH 651.
653. **Physio-chemical Separations (5). Lec. 4, Lab. 3.** Spring quarter, even years. Pr., CH 409.
654. **Radiochemical Analysis (5). Lec. 3, Lab. 6.** Summer quarter, odd years. Pr., CH 205. The application of radioactive tracers and related techniques to chemical analysis.
670. **Seminar (1).** (Total credit not to exceed 10 hours). Each quarter except Summer. Required course for all graduate students in chemistry.
699. **Research and Thesis.** Credit to be arranged. May be taken more than one quarter.
799. **Doctoral Research and Dissertation.** Credit to be arranged.

Civil Engineering (CE)

Head Professor Sawyer

Professors Bransford, Hudson, and Popovics

Associate Professors Blakney, Krishnamurthy, Leigh, and Metz

Assistant Professors Judkins and Peterson

Instructor Ramey

201. **Surveying I (5). Lec. 3, Lab. 6.** Pr., MH 160 or 161 and EG 102 or equivalent. Measurement of distances, elevations and angles; analysis of errors; adjustment of instruments; computation of positions, areas and volumes; contours; establishing grades; topographic mapping and land surveying.
203. **Surveying II (4). Lec. 3, Lab. 3.** Pr., CE 201, MH 264. Laying out simple curves, compound curves, spirals and vertical curves; astronomic observations; special topics in excavation and embankment.
210. **Engineering Surveying (3). Lec. 2, Lab. 3.** Pr., MH 160 or 161. Use of tapes, transits and levels; computation of positions, areas and volumes; grades; mapping; contours. For non-Civil Engineering students.
303. **Structural Materials Testing (3). Lec. 2, Lab. 3.** Pr., ME 208. Physical behavior of structural materials. Use of strain gages. Testing of structural members under axial loads and in flexure.
304. **Theory of Structures I (5).** Pr., ME 208. Stress analysis of statically determinate structures; reactions, shears, moments, and influence lines. Influence tables.
305. **Water Supply and Disposal Systems (5). Lec. 4, Lab. 3.** Pr., CE 309. Theory and design of water collection and distribution facilities and waste-water collection systems. Laboratory includes fundamental tests relating to both water supply and waste-water treatment. Emphasis placed on theory and significance of the tests.
308. **Hydraulics I (3).** Pr., ME 307. Fundamentals, definitions and fluid properties; Fluid statics; Ideal flow concepts and basic equations; Dimensional Analysis and Similitude.

- 309. Hydraulics II (3). Lec. 2, Lab. 3. Pr., CE 308.**
Real fluids; Fluid resistance; Fluid measurement and control; Steady pipe flow; steady open channel flow; unsteady flow. Emphasis on steady pipe and open channel flow.
- 314. Photogeology for Engineers (5). Lec. 4, Lab. 3. Pr., CH 104, CE 201.**
Photographic materials and nomenclature; petrology; physical geology; use of aerial photography in interpretation of culture, petrology, structural geology, geomorphology and hydrology for resource development.
- 320. Highway Engineering I (5). Pr., CE 203.**
Development of highways; plans and surveys; geometric design; traffic capacity; traffic control; and drainage.
- 380. Theory of Structures II (5). Pr., CE 304, junior standing.**
Stress analysis of statically indeterminate structures. Slope and deflection. Moment area, conjugate structure, consistent deflection, slope deflection, moment distribution. Influence lines.
- 400. Higher Surveying (5). Lec. 4, Lab. 3. Pr., CE 203, junior standing.**
Photogrammetry, map projections, electronic and special instruments, selected geodetic topics.
- 402. Statically Indeterminate Structures (5). Pr., CE 380, senior standing.**
Special topics in moment distribution; continuous and internally indeterminate trusses; beams on elastic supports.
- 404. Reinforced Concrete (5). Lec. 4, Lab. 3. Pr., CE 380, senior standing.**
Working stress and ultimate strength approaches to the design of beams, slabs and columns; building codes.
- 405. Water and Waste-Water Treatment (5). Lec. 4, Lab. 3. Pr., CE 305, junior standing.**
Theory, design, construction, and operation of water treatment and waste-water disposal facilities considered on a unit operations basis.
- 407. Municipal Engineering I (3). Pr., senior standing.**
Duties and responsibilities of city engineer and municipal consultant; problems connected with promoting, financing, designing, and constructing municipal improvements.
- 408. Engineering Foundations (3). Pr., CE 404, CE 418, CE 314, senior standing.**
Application of geology, soil mechanics, and structural theory to the design of foundations such as footings, piles, pile groups, retaining walls, abutments, and bridge piers. Review reports on current articles in technical publications.
- 409. Environmental Health Engineering (5). Pr., senior standing.**
Application of engineering methodology to communicable disease control, insect and rodent control, milk and food sanitation, institutional and housing hygiene, swimming pool sanitation, rural sanitation, industrial hygiene, refuse collection and disposal, radiological sanitation, and air pollution.
- 410. Highway Engineering II (5). Pr., CE 320.**
Contracts and specifications; supervision of construction; structural design of roadway section; construction procedures and maintenance.
- 411. Flow in Open Channels (5). Lec. 5. Pr., CE 309 or ME 325, junior standing.**
Uniform flow, rapidly varied flow, gradually varied flow, subcritical transitions, surges, supercritical transitions, bends, precipitous slopes, energy dissipation, spillways, and oscillatory waves.
- 412. Hydrology (5). Lec. 5. Pr., CE 309 or ME 325, junior standing.**
Precipitation, runoff, flood routing, flood control, river regulation, and coastal engineering problems.
- 413. Hydraulic Structures (5). Lec. 5. Pr., CE 309 or ME 325, senior standing.**
Dams, spillway, outlet works, gate structures, locks, structures for river regulation, canals, structures for shore protection, port facilities.
- 414. Structural Design I (4). Lec. 3, Lab. 3. Pr., CE 380, junior standing.**
The structural design of metal and timber members for flexure, shear, tension, compression and combined effects. Design of trusses, frameworks and connections.
- 415. Construction Planning (5). Lec. 4, Lab. 3. Pr., junior standing.**
Construction methods; estimates of materials and costs; critical path scheduling, and reports.
- 416. Prestressed Concrete Design (3). Pr., CE 404, senior standing.**
The principles and practice of prestressed concrete; design of pre- and post-tensioned beams for flexure and diagonal tension. Special topics.
- 417. Structural Design II (5). Lec. 4, Lab. 3. Pr., consent of the instructor and senior standing.**
Design studies in selected topics such as continuous trusses, rigid frames, multistory frames, and arches.

418. Soil Mechanics (5). Lec. 4, Lab. 3. Pr., ME 208, junior standing. Engineering properties of soils; soil surveys and sampling; stability; laboratory analysis and tests.
419. Municipal Engineering II (3). Lec. 2, Lab. 3. Pr., senior standing. Engineering problems of municipal transportation, communications, water supply, sewerage, streets, schools, shopping, parking, and recreation facilities.
420. Sanitary Engineering Laboratory (5). Lec. 4, Lab. 3. Coreq., CE 405, junior standing. Studies in the physical, chemical, and biological aspects of environmental engineering; laboratory testing procedures and experiments relating to the treatment of waters and wastes; interpretation of routine plant control analyses and indices of pollution.
421. Water Resources Engineering (5). Lec. 5, Pr., CE 309, senior standing. Environmental significance; hydrologic factors; water laws; water uses; nature, sources and abatement of pollution; quantity control measures, planning.
422. Senior Seminar (1). Pr., senior standing in Civil Engineering. Report on current civil engineering literature; discussion and engineering developments; engineering organizations, publications and activity; special speakers.
423. Similitude in Engineering (3). Lec. 2, Lab. 3. Pr., senior standing or consent of instructor. Principles of dimensional analysis and similitude, types and uses of models, analogies. Simple applications to engineering problems.
424. Air Pollution (3). Pr., senior standing and consent of the instructor. The nature of polluting materials including gases, dusts, vapors and fumes and the relation of atmospheric conditions to their dispersal. Administrative standards and controls pertaining to air pollution.

GRADUATE COURSES

600. Bituminous and Concrete Mix Design (5). Lec. 3, Lab. 6. Pr., CE 603. Methods of design of bituminous and concrete mixes, with practice in job and laboratory control tests of aggregates and mixes.
601. Subgrade Stabilization (5). Lec. 3, Lab. 6. Pr., CE 418. Factors involved in stabilization with practice in laboratory and job control tests.
602. Advanced Soil Mechanics (5). Lec. 3, Lab. 6. Pr., CE 418. Earth pressure theories; stability computations; seepage computations; consolidation; footing, raft, pile and pier foundation; shearing strengths.
603. Mechanical Properties of Concrete (5). Lec. 3, Lab. 6. Pr., CE 303. Fresh concrete: workability, consistency, composition, unitweight, segregation, bleeding. Hardened concrete: various strengths, deformations under load, time-dependent deformation, etc. Effects on these properties. Test methods. Relations between the composition and mechanical properties of concrete.
610. Model Analysis of Structures (2). Lec. 0, Lab. 6. Pr., consent of instructor. Structural models, direct and indirect model analysis of structures. Instrumentation for structural testing.
612. Hydrodynamics (5). Lec. 5. Pr., CE 309 or ME 325 and MH 361. Equations of motion for nonviscous liquids, force potentials, velocity potentials, conformal mapping, circulation, vortices, equations of motion for viscous liquids, boundary layers, drag, turbulence, and wave motion.
613. Flow of Fluids in Pipes (5). Pr., CE 309 or ME 325. Viscous and turbulent flow of liquids, effects of compressibility, pressure waves, secondary flows, control devices, measuring devices.
620. Advanced Water and Waste-Water Treatment (5). Pr., consent of instructor. An advanced study of the principles utilized in water and sewage treatment processes and environmental health engineering practice.
621. Advanced Design of Water Supply and Disposal Systems (5). Lec. 3, Lab. 6. Pr., consent of instructor. Problems in the layout and design of water, sewage, or industrial waste systems and treatment plants.
622. Advanced Environmental Engineering Practice (5). Lec. 3, Lab. 6. Pr., consent of instructor. Advanced laboratory problems and field exercises in the application of sanitary examination of water, milk, food, wastes, and air; stream pollution and industrial waste surveys.
623. Industrial Waste Treatment (5). Pr., consent of instructor. Industrial waste problems, including the characteristics of individual industries, effects on streams, and methods of treatment and disposal; treatment and disposal of radioactive wastes.

- 630. Advanced Stress Analysis (5). Lec. 4, Lab. 3. Pr., consent of instructor.**
Buckling of structures, analysis of elastic and plastic stability, torsion, secondary stresses, arches, theory of limit design.
- 631. Special Topics in Structural Design (5). Lec. 4, Lab. 3. Pr., CE 630.**
Design problems related to continuous frames and trusses; economical proportions, analysis and design of connections.
- 632. Experimental Stress Analysis (5). Lec. 3, Lab. 6. Pr., consent of instructor.**
Basic theory and laboratory techniques for experimental stress analysis; measurement of strain by mechanical and electrical gages; brittle lacquer, and photogrid; two dimensional photoelasticity; membrane analogies; treatment of errors. Term paper required, except for undergraduates permitted to enroll in course.
- 633. Elasticity (5). Pr., consent of instructor.**
Plane stress and plane strain; differential equations of equilibrium; equations of compatibility, two-dimensional problems in rectangular and polar coordinates; strain-energy methods; analysis of stress and strain in three dimensions, torsion of circular and non-circular cross-section; bending of prismatical bars; stress evaluation from strain measurements.
- 634. Advanced Reinforced Concrete (5). Lec. 5. Pr., CE 404.**
Effect of shrinkage, plastic flow and deflection on concrete design. Plastic and ultimate strength theories of design. Fundamentals of prestressed concrete.
- 635. Numerical Techniques in Structural Analysis (5). Lec. 5. Pr., consent of instructor.**
Approximate methods of analysis for structural members of variable section; stiffness factors; stability; vibrations; elastic foundations, beam-columns.
- 636. Topics in Structural Dynamics (5). Lec. 5. Pr., consent of instructor.**
Vibration theory. Analytical and numerical methods for computing the dynamic response of structural systems. Blast loads; earthquakes; and wind oscillations. Electronic computation will be used.
- 637. Matrix Analysis of Structures (4). Lec. 3, Lab. 3. Pr., consent of instructor.**
Displacement and force methods of matrix analysis of structures; applications to determinate and indeterminate trusses, beams and frames; lack of fit, yielding of support and temperature effects; special methods such as rank technique; computer solutions.
- 690. Seminar. Credit to be arranged. May be taken more than one quarter.**
- 699. Thesis. Credit to be arranged. May be taken more than one quarter.**

Dairy Science (DH)

Professors Autrey, Cannon, and Hawkins

Associate Professor Rollins

Assistant Professor McCaskey

- 101. Man's Food (1). Lec. 1. Fall.**
Analysis of the world food supply; problems of food availability and distribution; methods of alleviating food shortages; role of the food processor.
- 200. Fundamentals of Dairying (5). Lec. 4, Lab. 3. All quarters. Pr., CH 103.**
General survey of dairying. Feeding, care and management of dairy cattle. Dairy farm equipment and records. Composition and properties of milk. Handling, testing and processing of milk.
- 314. Dairy Cattle Judging (3). Lec. 2, Lab. 3.**
Comprehensive study of the ideal body type and conformation pertaining to the major dairy cattle breeds and to the functional anatomy of the cow. Practical work in comparative dairy cattle judging; conduct of judging contests, oral and written reasons for placings; fitting and exhibiting dairy cattle at fairs and shows.
- 317. Dairy Cattle Feeding and Management (5). Lec. 4, Lab. 3. Pr., DH 200 and AH 204.**
Evaluation of various feeds for growth and milk production; nutritional requirements of dairy animals; application of the principles of nutrition to dairy cattle feeding; calculating rations. Some time devoted to dairy cattle breeding plans, procedures of herd record keeping and management.
- 402. Artificial Insemination (3). Lec. 1, Lab. 6. Winter. Pr., DH 200 and junior or senior standing.**
The Artificial Insemination Association; anatomy and physiology of bovine reproduction; practice in collecting, processing and using semen in breeding cows; and study of factors affecting breeding efficiency.

403. **Dairy Farm Practices (5).** Lec. 3, Lab. 6. Spring. Pr., DH 317 and junior standing.
Practical study of feed production, storage, and feeding problems; analysis of herd records and pedigrees; study of herd management procedures. In this course emphasis is on situations and records existing on dairy farms.
406. **Dairy Cattle Feeding and Management (3).** Pr., AH 204 and DH 200 or DH 317, and graduate standing.
Bases of modern feeding practices; emphasis on reasons for feeding high quality roughage and high energy feeds. Limited study of dairy herd management problems and practices; milk production, testing and recording; appraisal of artificial breeding as a tool in cattle improvement.
407. **Dairy Chemistry (5).** Lec. 3, Lab. 4. Pr., CH 203 or CH 208 and junior standing.
Chemistry of milk constituents; interaction of constituents with one another under various conditions; analysis of milk, milk constituents, and milk products.
- 408-9. **Processing Dairy Products (5-5).** Lec. 3, Lab. 6. Winter, Spring. Pr., HF 342. Application of processing operations to the processing of dairy products; special processing techniques; quality control of products.
410. **Food Microbiology (5).** Lec. 3, Lab. 4. Spring. Pr., VM 200.
The relationship of habitat to the occurrence of microorganisms on food; environment affecting the growth of various microorganisms in foods; microbiological action in relation to food spoilage and food manufacture; physical, chemical and biological destruction of microorganisms in foods; methods for microbiological examination of foodstuffs; and public health and sanitation bacteriology.
411. **Food Plant Sanitation (3).** Lec. 2, Lab. 2. Winter. Pr., junior standing.
Sanitary regulations of food plants. Principles and procedures of cleaning and sanitizing food handling equipment.
412. **Food Science Seminar (1).** Lec. 1. Pr., senior standing.
Lectures, discussions, literature reviews by staff, students and guest speakers.

GRADUATE COURSES

601. **Milk Secretion (5).** Pr., consent of instructor.
Anatomy and physiology of milk secretion; milk precursors; factors affecting composition of milk.
602. **Technical Control of Dairy Products (5).** Pr., consent of instructor.
Advanced methods of analyses of dairy products and the relation between composition and processing methods.
604. **Market Milk (5).** Pr., DH 410.
Scientific investigations of current problems and their application to the commercial processing and handling of market milk. Special assigned problems.
605. **Ice Cream Making (5).** Pr., DM 410.
Scientific investigations of current problems and their application to the commercial manufacture and handling of ice cream. Special assigned problems.
607. **Advanced Dairy Cattle Breeding (5).** Pr., consent of instructor.
The anatomy and physiology of reproduction in dairy cattle; artificial insemination problems.
608. **Dairy Cattle Nutrition (5).** Pr., consent of instructor.
Critical review of literature on certain dairy cattle nutrition subjects; planning and executing one or more experimental nutrition problems.
609. **Experimental Methods in Dairy Research (5).** Pr., BY 401 or equivalent.
Study of technics in designing dairy research projects and in analyzing results.
610. **Special Problems in Dairy Science (3-5).** Credit to be arranged.
611. **Seminar (1).** May be taken for more than one quarter.
699. **Research and Thesis.** Credit to be arranged.

Drama (DR)

*Head Professor Campbell
Assistant Professors Holland and Comeau
Instructor Mooney*

- 101-2-3. **Introduction to the Arts (1).**
A survey of the arts with emphasis on the interrelation between the various creative areas of Art, Music, Drama, Architecture, etc. from the position of the artist and the observer.
104. **Introduction to Theatre I (3).**
Theatre as an art form, a broad introduction involving general aesthetics, philosophy, and history.

105. **Introduction to Theatre II (3).**
A continuation of DR 104 with special emphasis on analysis of theatre as an art form requiring multiple talent resources.
106. **Introductory Theatre Projects (3).**
Each student engages in a theatre project which he conceives and effectuates under staff supervision.
107. **Stage Craft I (1).**
An introduction to technical theatre as the craft of scene construction.
108. **Stage Craft II (1).**
An introduction to technical theatre as the craft of electronics.
109. **Stage Craft Project (1).**
Each student engages in a stage craft project which he conceives and effectuates under staff supervision.
199. **Theatre Laboratory (1).**
General laboratory work (a minimum of 30 hours under staff supervision). A course open to any student interested in working on the theatre season of the Department in any production capacity. May be repeated for maximum credit of six quarter hours.
201. **The Theatre Artist in Society I (3).**
A historical examination of the role and place in society of the theatre artist with emphasis on recurring problems of orientation and acceptance.
202. **The Theatre Artist in Society II (3).**
An examination of the role and place in society of the theatre artist in America with emphasis on unionism, professionalism, and educational theatre.
203. **Theories of Acting (3).**
The theoretical aspects of acting to include writings from the time of Aristotle to the present day.
204. **Fundamentals of Acting I: Voice (5).**
Developing the voice as a performing instrument.
205. **Fundamentals of Acting II: Movement (5).**
Developing the body as a performing instrument.
206. **Acting I (5). Pr., 204, 205, or equivalent.**
A first course in acting involving the skills acquired in DR 204 and DR 205 in short acting sequences.
301. **History of Theatre in Western Civilization (3).**
The theatre as literature, institution, and architecture as it has existed from earliest times to the end of the medieval period.
302. **History of Theatre in Western Civilization (3). Pr., DR 301.**
The theatre as literature, institution, and architecture as it has existed in Western culture from the end of the medieval period until the mid-nineteenth century.
303. **History of Theatre in Western Civilization (3). Pr., DR 301, 302 or equivalent.**
The theatre as literature, institution, and architecture in Western civilization from the mid-nineteenth century to the present day with emphasis on theatre in America.
304. **Fundamentals of Stage Design (5).**
The basic considerations involved in all aspects of the performer's stage environment.
305. **Design in the Theatre I (5). Pr., DR 304 or equivalent.**
A continuation of fundamental design concepts with emphasis on stage lighting.
306. **Design in the Theatre II (5). Pr., DR 304, 305, or equivalent.**
Practice in stage design.
307. **Children's Theatre (3).**
Theatre for children involving an examination of play scripts, acting, and production techniques.
308. **Creative Dramatics (3).**
The dramatic instincts of pre-school and early elementary school children in the light of contemporary theory and practice in this area.
309. **Costume and Make-Up (3).**
The design and construction of elementary stage costumes and make-up.
- 310-11-12. **Dramatic Production (3-3-3). Lec. 2, Lab. 6.** Only students approved by the department head may register for these courses.
Advanced acting.
313. **Theatre Appreciation I (3). General Elective. Not open to Drama Majors.**
A survey of the theatre and stagecraft from early times to the present day, emphasizing the social and artistic position of the stage in each civilization.
314. **Theatre Appreciation II (3). General Elective. Not open to Drama Majors.**
A survey of contemporary plays and productions.

401. Play Analysis (3). An examination of play scripts emphasizing interpretation from the viewpoint of directorial theory.
402. World Theatre (3). Theatre literature and practice as they have developed and presently exist in cultures outside of the Western hemisphere.
403. Seminar and Theatre Research (3). The past and present patterns of research in all areas of theatre theory and practice.
404. Directing I (5). Introductory basis theory and technique of directing theatre productions.
405. Directing II (5). A continuation of DR 404 involving practical exercises in directing.
406. Directing III (5). Provides the student with several directing problems which must be solved through the completion of a directing project. Prerequisites DR 405, 406 or equivalents.
407. Acting II (5). Pr., DR 204, 205, 206, or equivalent. Specialized areas of acting theory and technique with emphasis on acting theoreticians of the twentieth century.
408. Problems in Aesthetic Design (5). Pr., DR 304, 305, 306, or equivalent. An intensive study of stage design problem solving based on the works of design theoreticians of the twentieth century.
409. Directing IV (5). Pr., DR 404, 405, or equivalent. Directing theory based on the detailed analysis of the work and writings of selected twentieth century directors.
- 410-11-12. Dramatic Production (3-3-3). Lec. 2, Lab. 6. Pr., approval of department head. Seminar and workshop in Advanced Acting.
- 425-26. Theatre Practice in the School (5-5). Pr., senior or graduate standing. (Either part can be taken separately.) To be offered in the Summer quarter only. For the teacher who is called upon to select, plan, coach, and produce plays, classroom and assembly programs.

Economics (EC), Geography (GY), and Secretarial Administration (SA)

*Professors Anson, Chastain, Hartman, Henderson, Kern, Kinney,
Klontz, Richardson, and Ritland*

Research Professor Steele

*Associate Professors Allen, Boston, Gritz, D. P. Hale, Henley,
Henry, Hill, Lamar, Myles, and Stalnaker*

*Assistant Professors Bagwell, Brown, Clark, Cook, Criss, Dorman, Frisby,
Goodwin, F. O. Hale, Stanaland, D. Street, Whartenby, and Williams*

Instructors B. Andress, L. Andress, Barbay, Beard, Blades, Bond, Bryan, Bushey,
Carlson, Dunn, Jenkins, Paterson, Robbins, M. Street*,
Whatley, Womack, and Woodfin*

Economics (EC)

Accounting

- 211-212. Introductory Accounting (5-5). Lec. 3, Lab. 4. Pr., sophomore standing. Bookkeeping procedure and elementary accounting principles. EC 211 is prerequisite to EC 212. EC 211 not open to students having credit in EC 215.
215. Fundamentals of General and Cost Accounting (5). Lec. 3, Lab. 4. Pr., sophomore standing. The fundamental concepts and principles of general and cost accounting with emphasis on accumulating, reporting, and interpreting cost data in the production area of business operations. (Not open to undergraduates majoring in BA. Credit in EC 211 excludes credit for EC 215).
- 311-12. Intermediate Accounting (5-5). Lec. 3, Lab. 4. Pr., EC 212. The advanced principles of accounting involving partnerships, corporations, systems, and analysis of financial statements.

* Temporary.

314. **Income Tax Accounting (5).** Pr., EC 212.
Interpretation of the regulations, preparation of returns, and the keeping of accounting records for tax purposes will be considered in this course.
- 411-12. **Cost Accounting (5-5).** Lec. 2, Lab. 6. Pr., EC 312, and junior standing.
Accounting principles involved in job-lot, process, and standard cost accounting.
414. **Advanced Income Tax Accounting (5).** Pr., EC 312, 314, and junior standing.
Special tax accounting problems of individuals, partnerships, corporations, estates, and trusts. Extensive use will be made of a tax service program.
416. **Auditing (5).** Pr., EC 312, and junior standing.
The principles of auditing with particular attention to methods of testing, analyzing, and summarizing accounting records.
- 417-18. **Advanced Accounting (5-5).** Lec. 2, Lab. 6. Pr., EC 312, and junior standing.
Advanced accounting theories and procedures, consolidation of financial statements, and other special problems will be studied in this course.
419. **Governmental Accounting (5).** Pr., EC 312, and junior standing.
Budgeting and accounting procedures of governmental divisions.

Economic Theory and History

200. **General Economics (5).** Pr., MH 122 or equivalent, sophomore standing.
Economic principles with emphasis upon the macro-economic aspects of the national economy.
202. **Economics II (5).** Pr., EC 200.
A continuation of economic principles with emphasis upon micro-economic aspects of the economy.
206. **Socio-Economic Foundations of Contemporary America (3).** General elective.
The social and economic developments which lead to and help toward an understanding of present day American society.
451. **Intermediate Microeconomics (5).** Pr., EC 202, junior standing.
The theory of pricing under varying market conditions and distribution of income among the factors of production.
452. **Comparative Economic Systems (5).** Pr., EC 202, junior standing.
An analysis of the rival economic doctrines of Capitalism, Socialism, and Communism.
453. **Economics of Growth and Development (5).** Pr., EC 202 and junior standing.
Concepts, principles and problems of economic growth and development with consideration of appropriate policies for both underdeveloped and advanced economies.
454. **History of Economic Thought (5).** Pr., EC 202, junior standing.
The development of economic ideas, principles, and systems of analysis from early times to the present.
456. **Intermediate Macro-economics (5).** Pr., EC 202 and junior standing.
The measurement of national output, and with income and employment theory, general equilibrium theory, and theories of interest, investment, and consumption.
457. **Economic History of Europe (5).** Pr., junior standing.
Economic contributions of the medieval period; mercantilism; laissez-faire; developments in agriculture, industry, transportation, trade, and banking to World War II.
458. **Economic History of the United States (5).** Pr., junior standing.
Development of the economic institutions, growth of industries, regional specialization, and relation of government to business enterprise from the Colonial period to the present.
460. **Economic Development of the South (5).** Pr., EC 458 and junior standing.
The historical approach to the development of industry, transportation, banking, etc., in the South. Emphasis is given to Alabama.
471. **Foreign Trade (5).** EC 202, junior standing.
Economic background of foreign trade, various products in foreign trade, balance of trade, financing foreign trade, etc.

Finance

360. **Money and Banking (5).** Pr., EC 202 or AS 202, junior standing.
Money, credit and banking including consideration of monetary systems, foreign exchange and commercial banking with relation to the Federal Reserve System.
446. **Business Cycles (5).** Pr., EC 202 and junior standing.
The causation of economic cycles, their measurement and proposed means of control.
462. **Monetary Theory and Policy (5).** Pr., junior standing and EC 360.
Advanced monetary and banking policy. Attention given to government fiscal policies and programs.

463. **Corporation Finance (5).** Pr., EC 202 and 212, junior standing. Financial organization and policies of modern business enterprise with special emphasis on the corporation.
464. **Investments (5).** Pr., EC 463, junior standing. Individual investment policies, investment institutions, and types of investments available.
465. **Public Finance (5).** Pr., EC 202, junior standing. Facts and principles of government revenues and disbursements including attention to state and local financial problems.

General Business

101. **Introduction to Business (5).** An introductory course for Business Administration majors covering business organization and procedure. (Not open to juniors or seniors or students with credit in EC 200.)
321. **Property Insurance (5).** EC 200 and junior standing. The principles, uses and types of insurance with particular emphasis on fire, marine, automobile and casualty lines.
322. **Life Insurance (5).** Pr., EC 200, junior standing. The organization of the life insurance business and the various types of contracts.
323. **Real Estate (5).** Pr., EC 200, junior standing. The fundamental principles and practices as applied to the purchase, sale, lease, mortgage, title and management of real estate.
340. **Personal Finance (3). General elective.** Pr., junior standing. Plans for managing personal financial problems involving insurance, housing, household budgeting, investments, personal and bank loans, credit and time buying, etc.
341. **Business Law (5).** Pr., EC 200, or AS 202. Contracts, torts, courts and partnerships from the standpoint of the average citizen.
342. **Business Law (5).** Pr., EC 341. Legal principles covering sales, agency, insurance, personal property, real property, suretyship and bankruptcy presented from the standpoint of the layman.
402. **American Industries (5).** Pr., EC 200, and junior standing. Selected industries, emphasizing economic factors affecting growth, organization and operation.
455. **Government and Business (5).** Pr., junior standing and EC 202. The regulation and control of business by government with emphasis upon the legislation dealing with combinations, public utilities, transportation, and economic development.
472. **Economics of Transportation (5).** Pr., EC 200, junior standing. The development of systems of transportation. Rates are studied as they affect agriculture, commerce and industry. Attention is also given to government regulation of transportation agencies.
473. **Traffic Management (5).** Pr., junior standing, EC 472 or instructor's approval. Fundamentals of traffic control in the transportation operations of business and industrial concerns.
476. **Motor Transportation (5).** Pr., EC 200, junior standing. Economics of the motor transportation business with emphasis on freight and passenger carriers and the highway system. Particularly designed for students of business and of civil engineering.

Management

300. **Business Organization & Management (5).** Pr., EC 202. A brief description of the structure and major functions of business followed by evaluation of the basic managerial techniques as applied in the operation of business enterprises.
400. **Industrial Management (5).** Pr., junior standing and EC 300. Principles and practices of modern scientific management as applied in the actual control and operation of industrial enterprises.
404. **Administrative Management (5).** Pr., EC 300 or SA 400, or consent of instructor, junior standing. Administrative organization, systems design, data collection and processing methods, communications and records management, office physical facilities, office performance standards and control, motivation of office personnel.
433. **Retail Store Management (5).** Pr., EC 331, junior standing. Principles and practices involved in the scientific operation of the retail store. Store location, layout, buying, pricing, and merchandise control.

- 437. Sales Management (5).** Pr., EC 300, EC 331, junior standing.
 Principles and practices of sound organization and administration of sales organization. Includes consideration of: sales department organization, selecting, training, compensating, and supervising salesmen, sales planning, setting up sales territories and quotas and other problems.
- 449. Advanced Personnel Management (5).** Pr., EC 442 or PG 461, and junior standing.
 This course deals with the solution of selected subjects of problems which confront personnel managers and related supervisory personnel.
- 475. Quantitative Methods of Management (5).** Pr., junior standing and EC 274. Quantitative methods in management and their application in production, marketing, and finance.
- 480. Business Policies and Administration (5).** Pr., EC 202, EC 300, or consent of instructor, junior standing.
 The formulation and application of policies and programs pertaining to personnel, production, finance, procurement and sales in the business enterprise.

Marketing

- 331. Principles of Marketing (5).** Pr., EC 202.
 A general but critical survey of the field of marketing covering marketing channels, functions, methods and institutions.
- 332. Credits and Collections (5).** Pr., EC 200, junior standing.
 The nature and functions of credit, credit investments, credit information, mercantile and installment credit, credit department, organization and management, collection methods, credit insurance, etc.
- 333. Salesmanship (3).** Pr., junior standing.
 The principles and problems in personal selling covering the various steps involved in the selling process. Consideration is also given to the economics of selling and to material useful to salesmen but outside the field of selling techniques.
- 432. Advertising (3).** Pr., EC 331, junior standing.
 The principles and practices involved in advertising. Analysis of the need for advertising. Preliminary product and market analyses, budget considerations, technical preparation and testing, planning campaigns, media selection, and coordination of the entire program.
- 434. Purchasing (5).** Pr., EC 331, junior standing.
 Objectives, control, and the direction of industrial purchasing.
- 435. Marketing Problems (5).** Pr., EC 331, junior standing.
 Marketing problems, policies, costs, channels of distribution, terminal markets, trade barriers and legislation.
- 436. Marketing Research Methods (5).** Pr., EC 331, junior standing.
 Methods of scientific research in the field of marketing and their application to the solution of marketing problems.
- 438. Retail Merchandising (5).** Pr., EC 433 and junior standing.
 The planning, policies, procedures, and techniques necessary to insure a balanced assortment of merchandise consistent with customer demand and profitable operation.

Personnel Management and Industrial Relations

- 350. Labor Problems (5).** Pr., EC 202, junior standing.
 The problems of the industrial workers from the standpoint of the worker, the employer, and society.
- 442. Personnel Management (5).** Pr., EC 300 or IE 201, junior standing.
 Management of labor, dealing with selection, training, placement, turnover, payment policies, employee representation, etc.
- 444. Labor Legislation (5).** Pr., EC 350, junior standing.
 Analysis of background, content, and significance of industrial relations, wage and hour, and selected social security laws.
- 445. Industrial Relations (5).** Pr., EC 200, junior standing.
 Analysis of legislation, collective bargaining, union-management corporation and economic conditions bearing upon employer-employee relations.
- 447. Job Evaluation (3).** Pr., EC 442 or EC 445, junior standing or consent of instructor.
 Wage and salary policy and administration with emphasis on the rationalization of wage and salary structures.
- 448. Incentive Methods (3).** Pr., EC 447, junior standing or consent of instructor.
 Methods and associated problems of providing incentives for workers and management personnel in industry and business.

Statistics

- 244. Graphic Methods in Business (3). Pr., EC 101.**
 Presentation and analysis of business data by means of graphs and charts including line, bar, area, and break-even types of charts. Graphic solutions in linear programming.
- 274. Business and Economic Statistics I (5). Pr., MH 122 or equivalent and EC 200 or AS 202.**
 Frequency distribution and time series analysis; index numbers; probability; binomial and normal distributions; introduction to statistical inference.
- 474. Business and Economic Statistics II (5). Pr., junior standing and EC 274 or equivalent.**
 Probability distributions including the Poisson and "t" distribution; advanced time series analysis; chi square; multiple and partial correlation; statistical decision theory.

GRADUATE COURSES (EC)

- 600. The National Income and Capital Accumulation (5). Pr., EC 202 and graduate standing or consent of instructor.**
 Computation of the national income, the uses of income data, interest rates, saving and investment, the monetary and credit system.
- 601. Value and Distribution (5). Pr., EC 451 and graduate standing or consent of instructor.**
 Positive content and limitations of the modern theories of value, wages, rents, and profits.
- 606. Management Problems (5). Pr., EC 480 or permission of instructor.**
 Basic administrative problems in business and industry. Managerial controls as applied to administrative and operative functions.
- 607. Managerial Economics (5). Pr., EC 202, graduate standing or consent of instructor.**
 Decision theory and criteria for decision-making concerning output, pricing, capital budgeting, scale of operations, investment and inventory control. Attention is also given to concepts of profits, production and cost functions, competition and equilibrium for the firm and the industry.
- 608. Business Research (5). Pr., EC 474, and graduate standing or consent of instructor.**
 The theory and practice of research through the mail survey, the personal interview, study of documents and observation. The analysis and presentation of research findings will be stressed.
- 610. Managerial Accounting (5). Pr., EC 212, and graduate standing or consent of instructor.**
 Primarily non-technical, for the student who will be confronted with business problems requiring a comprehensive understanding of accounting concepts, and the accepted methods of applying these concepts in decision-making, planning, and control.
- 611. Advanced Accounting Theory (5). Pr., EC 312 and graduate standing or consent of instructor.**
 A review of the origin and development of double-entry accounting; followed by a critical study of the theory of modern accounting principles and procedures.
- 614. Accounting Systems (5). Pr., EC 414, and consent of instructor.**
 Systems used in various types of business operations.
- 616. Advanced Auditing (5). Pr., EC 416 and graduate standing or consent of instructor.**
 Application of auditing principles and procedures to practical problems encountered in the field of public and private accounting.
- 617. Advanced Accounting Problems (5). Pr., EC 417 and graduate standing or consent of instructor.**
 An extension to and a consolidation of all the other advanced accounting courses. Preparation for special accounting examination.
- 621. Personnel and Labor Policy (5).**
 Seminar analysis and discussion of selected personnel or labor problems, programs and cases.
- 622. Theory of Wages and Labor Mobility (5). Pr., EC 350 and EC 451 or permission of instructor.**
 Includes advanced study of various theories of wage determination and of theories and empirical studies of labor supply and mobility.
- 650. Economic Seminar (1-10). Pr., graduate standing or consent of instructor.**
 For those students engaged in intensive study and analysis of economic problems.

654. Advanced History of Economic Thought (5). Pr., EC 454 or consent of instructor.
 A study tracing the development of economic thought with emphasis upon Classical and Neo-Classical authors and their critics. The contributions of each writer are examined in the economic context from which they emerged and their influence on economic thought and national policy considered.
660. Econometrics (5). Pr., EC 451, EC 474, EC 446 or EC 465, AS 460 and MH 405.
 Application of mathematics and statistical methods to problems of economic analysis. Econometric models of the economy as a whole and of individual sectors will be considered.
662. Seminar in Money and Banking. (EC 360 and consent of instructor.)
 Goals, procedures, and achievements in attaining monetary objectives at home and abroad. Special emphasis is given to published research results.
663. Advanced Corporation Finance (5). Pr., EC 463.
 Intensive study of theory and problems of business finance from a decision-making, internal, problem-solving point of view.
665. Seminar in Public Finance (5). Pr., EC 360, EC 465, and graduate standing or consent of instructor.
 Theory and principles of public finance at an advanced level with special emphasis on fiscal policy.
671. International Economics and Finance (5). Pr., EC 471.
 Advanced study of foreign trade theory and balance of payments analysis, exchange rates, capital movements, financial institutions. Current problems in international finance are examined.
674. Business and Economic Statistics III (5). Pr., EC 474 or equivalent.
 Design of experiments; analysis of variance and covariance; fitting of Gompertz and other growth curves; selected nonparametric statistical methods.
675. Managerial Statistics (5). Pr., EC 474 or EC 475.
 Application of classical and Bayesian statistical decision theory in the solution of management problems.
699. Research and Thesis. Credit to be arranged. May be taken more than one quarter.

Electrical Engineering (EE)

Head Professor Holmes

*Professors Graf, Haeussermann, Honnell, Lowry, Phillips, and Russell.
 Associate Professors Carroll, Feaster, Hickman, Nichols, Slagh, and Ventrice
 Assistant Professors Breland, James, Miller, and Rogers
 Instructors Carter, Douglass, Dupree, Golden, Maxson, Nale, and Pettus*

263. Circuit Analysis I (5). Lec. 4, Lab. 3. Pr., PS 203 and MH 361.
 Basic definitions; laws; theorems; techniques.
304. Electric Circuits (4). Pr., MH 252 or 263 and PS 203 or 206.
 Passive and active circuits. Not open to electrical engineering students.
305. Electronics and Instrumentation (5). Lec. 4, Lab. 3. Pr., EE 304.
 Instrumentation systems; communications systems. Emphasis on application. Not open to electrical engineering students.
306. Machinery and Power Transmission (5). Lec. 4, Lab. 3. Pr., EE 304.
 Electrical machinery; power transmission. Emphasis on application. Not open to electrical engineering students.
361. Circuit Analysis II (5). Lec. 4, Lab. 3. Pr., EE 263.
 Sinusoidal steady-state analysis, including magnetically coupled circuits; Fourier analysis.
362. Circuit Analysis III (5). Lec. 4, Lab. 3. Pr., EE 361.
 Transients.
363. Distributed Systems (5). Lec. 4, Lab. 3. Pr., EE 362.
 Transmission lines; other distributed parameter systems.
372. Electronics and Communications I (4). Lec. 3, Lab. 3. Pr., EE 361.
 Semiconductors; gas and vacuum devices; active circuits.
373. Electronics and Communications II (5). Lec. 4, Lab. 3. Pr., EE 372, EE 362.
 Amplifiers; oscillators; modulation; feedback; information theory.
383. Energy Conversion and Control Systems I (5). Lec. 4, Lab. 3. Pr., EE 361.
 Principles of energy conversion.

* On leave.

413. **Physical Electronics (4).** Pr., EE 492.
Physical principles of electrical and electronic devices.
442. **Automatic Feedback Control Systems (5).** Lec. 4, Lab. 3. Pr., EE 362.
Transfer functions; root locus plots; Nyquist and Bode diagrams; compensation.
443. **Solid State Electronics (3).** Lec. 2, Lab. 3. Pr., EE 471, EE 491 and junior standing.
Applied solid state physics; selected topics in advanced solid-state devices and circuits.
444. **Digital Computers (3).** Lec. 3. Pr., EE 471 and junior standing.
Logic circuits; system analysis; applications of Boolean Algebra.
445. **Nuclear Instrumentation (3).** Lec. 3. Pr., EE 471 and junior standing.
Electronic systems and devices utilized in nuclear science and technology.
446. **Analog Computers (3).** Lec. 2, Lab. 3. Pr., EE 471 and junior standing.
Computer programming including time and amplitude scaling. Computer solution of linear, non-linear, and partial differential equations. Simulation of various types of physical systems.
447. **Magnetic Devices (3).** Pr., EE 481 and junior standing.
Magnetic amplifiers and related magnetic devices employing both extrinsic and intrinsic feedback.
461. **Introductory Network Synthesis (3).** Pr., EE 362 and junior standing.
Introduction to the synthesis of passive networks, with emphasis on driving point functions.
471. **Electronics and Communications III (5).** Lec. 4, Lab. 3. Pr., EE 373.
Continuation of EE 373.
472. **Electronics and Communications IV (5).** Lec. 4, Lab. 3. Pr., EE 471.
Continuation of EE 471.
473. **Communication Systems (3).** Pr., EE 472 and junior standing.
Theoretical topics in modern communications systems.
481. **Energy Conversion and Control Systems II (5).** Lec. 4, Lab. 3. Pr., EE 383.
Continuation of EE 383; steady state and dynamic characteristics of electromechanical machines.
483. **Energy Conversion and Distribution (3).** Pr., EE 481 and junior standing.
Further practical aspects of energy conversion and distribution.
484. **Electronic Instrumentation for Graduate Students (4).** Lec. 3, Lab. 3. Pr., PS 203, MH 361, 8 hours of Electrical Engineering and junior standing.
Fundamentals of electronic instrumentation; special topics. Not open to electrical engineering students.
490. **Seminar.** Credit to be arranged. May be taken more than one quarter.
491. **Electromagnetic Fields I (5).** Lec. 4, Lab. 3. Pr., EE 363.
Differential and integral equations of the electromagnetic field; boundary conditions; solution of elementary boundary value problems.
492. **Electromagnetic Fields II (5).** Lec. 4, Lab. 3. Pr., EE 491.
Theory and application of guided waves; theoretical and experimental study of microwave devices and systems; relationship between field theory and circuit theory.
493. **Electromagnetic Fields III (5).** Lec. 4, Lab. 3. Pr., EE 492 and junior standing.
Radiating systems; wave propagation in unbounded media; applications to space communications; illustrative experiments.

GRADUATE COURSES

601. **Linear Analysis I (5).**
Methods of analysis, the exponential forcing function, Fourier series, Fourier transform, Laplace transform, and superposition integrals. Complex variables and contour integration.
602. **Linear Analysis II (5).** Pr., EE 601.
Generalized four terminal networks; network parameters, equivalent circuits, and interconnection of networks. Signal-flow diagrams, stability and transients on transmission lines.
605. **Active Circuits (5).** Pr., consent of instructor.
The analysis of active-device circuits: negative-resistance circuits and devices, amplifiers, oscillators, modulators, and demodulators.
610. **Power Transmission Systems (5).** Pr., EE 601.
Power transmission systems operating under both normal and fault conditions; problems of design, protection, relaying, and metering; various types of instabilities; application of digital computers to problems in power transmission.
612. **Advanced Topics in Electromechanical Energy Conversion (5).** Pr., EE 601.
Dynamic equations of motion of electromechanical systems; the generalized rotating electro-mechanical energy converter; dynamics of systems; the n-m symmetrical machine.

- 615. Advanced Electrical Measurements (5). Lec. 4, Lab. 3. Pr., EE 601.**
Measurements of circuit parameters, current, voltage, power, frequency, and wave shape at all frequencies; capabilities and limitations of contemporary measuring equipment.
- 617. Principles of Pulse Circuits (5). Lec. 4, Lab. 3. Pr., EE 601.**
Analysis and design of basic types of pulse forming circuits, with applications to pulse systems and laboratory work suited to the individual student's needs.
- 618. Linear Feedback Control Systems (5). Pr., EE 442, EE 601.**
Analysis of linear feedback control systems. Review of stability criteria including root locus, Routh-Hurwitz and Nyquist. Properties of matrices and general linear transformations. State space analysis of continuous and discrete linear time-varying and non-time-varying systems.
- 621. Electronic Computer Theory (5). Lec. 4, Lab. 3. Pr., EE 601.**
General study of computer components; operational amplifiers, function generators, multipliers, stabilized power supplies; pulse circuits, memory storage devices and read-outs devices; techniques of computer operation.
- 625. Sampled-Data Control Systems (5). Pr., EE 618.**
Analysis and synthesis of closed-loop sampled-data control systems using the z-transform; multirate sampled-data control systems; finite-width sampling.
- 626. Modern Control Theory (5). Pr., EE 618.**
Variational calculus in optimum control; the maximum principle of Pontryagin; dynamic programming; introduction to Wiener-Kalman-Bucy filter theory.
- 630. Electromagnetism (5). Pr., consent of instructor.**
Theory and application of electromagnetism for students not specializing in electromagnetics.
- 633. Nonlinear Analysis (5). Pr., EE 601.**
Detailed study of systems of nonlinear differential equations with illustrative examples drawn from models representing technological devices based on nonlinear effects.
- 636. Nonlinear Control Systems (5). Pr., EE 618.**
The analysis and synthesis of nonlinear closed-loop control systems; Lyapunov's methods; other stability criteria; numerical methods.
- 637. Plasma Dynamics (5). Pr., EE 630.**
A study of the dynamic properties of systems of charged particles, with emphasis on systems constrained by steady or time-varying magnetic fields. Areas emphasized are basic theory, laboratory models, and instrumentation.
- 639. Switching Theory I (5). Pr., EE 601.**
Number systems, binary coding, Boolean algebra, combinational switching circuits; multiple output combinational circuits, and bilateral switching networks.
- 640. Switching Theory II (5). Pr., EE 639.**
Models and elementary properties of sequential machines; sequential machine compatibility; equivalence, and state minimization; state assignment for sequential machines; asynchronous switching networks; and, speed independent switching circuit theory.
- 641. Digital Systems (5). Pr., EE 639.**
Memories and the associated read and write circuitry; arithmetical units; analog-to-digital converters; digital-to-analog converters; and special purpose digital units.
- 642. Advanced Topics in Switching and Automata Theory (5). Pr., EE 639.**
Current topics in the field of digital systems. This course will include a complete study of current issues of journals concerned with the design of digital systems.
- 645. Network Synthesis I (5). Pr., EE 601.**
Two-terminal passive networks; properties, realizability, and principles of synthesis. Conventional and modern filter synthesis.
- 646. Network Synthesis II. Pr., EE 645.**
Four-terminal passive networks; properties, realizability and principles of synthesis. Potential analogy and approximation problems.
- 650-1-2. Electromagnetic Theory and Applications I-II-III (5-5-5). Pr., consent of instructor.**
A three-course sequence for students specializing in electromagnetics.
- 653. Antennas (5). Pr., consent of instructor.**
Advanced treatment of radiating systems.
- 660-1-2. Quantum and Parametric Electronics I-II-III (5-5-5). Pr., consent of instructor.**
Atomic phenomena, quantum theory, kinetic theory and statistical mechanics; applications to electronic devices and systems.
- 670-1. Information Theory I-II (5-5). Pr., EE 601.**
Probability; random variables; and stochastic processes. Analysis of channel models and proofs of coding theorems; construction of error-correcting codes; statistical properties of information sources.

- 675-6. Communication Theory I-II (5-5). Pr., EE 670.
Signal detection and selection; modulation and coding; demodulation and decoding; contemporary topics in communication theory.
680. Directed Reading in Electrical Engineering. Credit to be arranged.
690. Seminar. Credit to be arranged. May be taken more than one quarter.
699. Research and Thesis. Credit to be arranged. May be taken more than one quarter.
799. Research and Dissertation. Credit to be arranged. May be taken more than one quarter.

Elementary Education (EED)

Head Professor Coss

Professors Ellisor and Newell

Associate Professors Roughton and Spencer

Assistant Professors Ashbaugh, Chant^o, English, Hayes, Jensen, and Wilder

Instructors Browning, Duncan^o, Edge^o, and Justice^o

Visiting Professor Riggsby^o

Orientation

101. Orientation: Personal and Professional (3).
Helps transfers from other curricula and students enrolled in other schools achieve optimum personal, social, and intellectual development as college students. Helps them understand teaching as a profession. (Credit in EED 101 excludes credit in EED 102-3-4.)
- 102-3-4. Orientation: Personal and Professional (1-1-1).
Helps freshmen achieve optimum personal, social, and intellectual development as college students and to assist in planning professional careers. (Credit in EED 102-3-4 excludes credit in EED 101.)

Reading Improvement

Available as a service course and as a general elective to all University students.

310. Reading Improvement (3). Lec. 2, Lab. 2. General elective. (Not open to students with credit in PG 101.)
Developmental reading for students who wish to improve their reading skills. Each student's present degree of reading efficiency is diagnosed and a program structured to his individual needs is planned and conducted.

Curriculum and Teaching

Undergraduate

329. Creative and Recreational Expression (6). Lec. 5, Lab. 3. Pr., FED 300 or consent of department chairman.
Creative and recreational expression, involving basic knowledge and understanding, laboratory demonstrations, and experimental approaches useful in this development, including such areas as music, art, rhythms, and other play activities, creative dramatics, creative writing, and use of learning materials.
370. Teaching Elementary School Mathematics (4). Pr., FED 300 or consent of department chairman.
Emphasis on understanding of curriculum content, current trends in teaching, use of appropriate teaching materials, planning for instruction, and evaluation of instruction.
371. Teaching of Reading and Other Language Arts (6). Pr., FED 300 or consent of department chairman.
Provides a balance between the theory and the methods of teaching reading and oral and written expression, including the use of appropriate instructional materials, equipment and organizational plans for various grade levels.
396. Music for the Elementary Teacher (3). Pr., MU 371 or consent of department chairman.
Elective course for Elementary Education Majors who need additional instruction in music.
421. Developing Understandings of the Natural and Social Environment (6). Lec. 5, Lab. 3. Pr., FED 300 or consent of the department chairman.
Attention is given to social science, natural and physical science, health and safety through use of appropriate children's books and other instructional materials, laboratory demonstrations and experimental approaches.

^o Temporary.

Undergraduate students in elementary education are eligible to complete requirements for teaching in certain areas in both the elementary and secondary schools. Students with this interest will complete one course in Teaching and one course in Program and a subject-matter concentration of 27 to 30 quarter hours in the subject-matter field selected. Teaching fields for the twelve-grade program include health, physical education and recreation, page 230, industrial arts, page 290, and the areas listed under Interdepartmental, page 249. (For description of student teaching requirements, see page 249.) Available courses for meeting the subject-matter concentration are listed under minor requirements for each field included in the twelve-grade program.

- 425. Student Teaching in Elementary School (10-15).** Pr., senior standing.
(For description, see page 250.)

Advanced Undergraduate and Graduate

- 461. Current Theory and Practice in the Teaching of Reading (5).** Pr., junior standing and teaching experience or consent of instructor.
Principles of reading instruction within the settings of the areas of child development, learning theories, individual differences, the role of reading in the total school and community environment, and examination of current reading materials.
- 474. Problems in Improvement of Reading at the Elementary School Level (5).** Pr., junior standing and teaching experience or consent of instructor.
An examination of problem areas of effective reading instruction in grades one through nine. Emphasis on phonetic word attack skills, comprehension, vocabulary building, and the use of supplementary materials in the reading program.
- 496. Music in the Elementary School (5).** Pr., junior standing.
To give the individual teacher a deeper insight into skills, techniques, and knowledge of music. Appropriate materials, adapted to social and musical interests of children, are studied and evaluated.
- 497. Organization of Elementary School Music (3).** Pr., junior standing and EED 329 or IED 423.
Theory and development of the music program in the elementary school.

Graduate

- 641. Diagnostic Procedures in Reading (5).** Pr., EED 461 or consent of department chairman.
Administration, scoring and interpretation of specific reading tests to determine causes of reading disability. Formal and informal evaluation procedures for regular and remedial classrooms. Screening tests for contributing factors to reading disability. Analysis and implication for correction of reading difficulties.
- 642. Remedial Procedures in Reading (5).** Lec. 3, Lab. 4. Pr., EED 641 or consent of department chairman.
Appropriate individual and group techniques for correcting deficiencies and practice in continuing evaluation of reading difficulties. Use of equipment and materials with children having reading problems.
- 646. Studies in Education (1-3).** Pr., one quarter of graduate study.
A research problem will be selected in consultation with the professor who will supervise it. The problem should contribute to the program of the student. (Credit in ED 651 prior to 1960 excludes credit in this course.)
- 649. Educational Trends and the Basic Skills (5).**
Recent developments in the elementary and junior high school with implications for teaching the basic skills.
- 656. Directed Individual Study in Reading Diagnosis and Reading Remediation (5).** Pr., EED 642 or consent of departmental chairman.
Clinical experiences in diagnosing problems in reading and related areas. Also clinical experiences in the remediation of reading problems.

Curriculum and Teaching in the Respective Areas of the Elementary School Program

Each of these courses 651, 652, 653, and 654 applies to the following areas of the elementary school program: (G) Language Arts, (H) Mathematics, (K) Science, and (L) Social Science.

- 651. Research Studies in Education in Areas of Specialization (5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
Review, analysis, and interpretation of available research with emphasis on designing new research to meet the changing needs of the school.

652. Curriculum and Teaching in Areas of Specialization (5). Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education. Teaching practices and reappraisal of selecting experiences and content for curriculum improvement.
653. Organization of Program in Areas of Specialization (2-5). Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education. Program, organization, and development of basic and supplementary materials for guiding teachers, faculties, and school systems in the continuous improvement of curriculum and teaching practices.
654. Evaluation of Program in Areas of Specialization (2-5). Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education. Evaluation and investigation of teaching effectiveness with attention also given to the utilization of human and material resources and the coordination of areas of specialization.
- Study in other teaching areas including art; dramatic arts; gifted; mental retardation; music; speech, speech correction; health, physical education and recreation; and industrial arts is available also to students in elementary education.
- 659-660. Practicum in Areas of Specialization (5-5).** Permission of major professor. Provides advanced graduate students with supervised experience with emphasis on the application of concepts, principles, and skills acquired in previous course work.

For advanced courses in curriculum, school library science, higher education, and research and dissertation, see IED.

Thesis

699. Thesis Research. (Credit to be arranged.) May be taken more than one quarter.

Engineering Graphics (EG)

Head Professor Francis

Associate Professors Ingram, Little, McClung, and Thornton

Assistant Professors Clement and Klepinger

Instructors Bilbe and Stewart

102. **Engineering Drawing I (2).** Lab. 6. Pr., Plain Geometry. Use of instruments; lettering practice; geometric constructions; principle views in projection; auxiliary and section views; dimensioning; detail working drawings; and isometric projection.
104. **Descriptive Geometry (2).** Lab. 6. Pr., EG 102 and Solid Geometry. Basic principles pertaining to points, lines, and planes; including problems on sections, developments, and intersections of solids.
105. **Engineering Drawing II (2).** Lab. 6. Pr., EG 102. Technical sketching; reading analysis of shop drawings; machine parts, detail and assembly drawings; types and arrangement of materials; titles and symbols; tracings, printing, and other reproduction methods; steel and timber structures; riveting and welding.
204. **Kinematics of Machines (3).** Lec. 2, Lab. 3. Pr., EG 104, EG 105, and coreq., PS 201. Spring quarter. A study and graphical analysis of the fundamental elements of machines, including definitions, velocity and acceleration diagrams, methods of transmission of motion by links, cams, gears, gear trains, and flexible connectors.
205. **Applied Graphic Statics (2).** Lec. 1, Lab. 3. Pr., EG 105 and coreq., PS 201. Resultants and equilibrium of concurrent, parallel and non-parallel forces; moments of parallel forces; general cases of reaction of coplanar forces; stresses in simple trusses by joint and section methods; cranes, derricks, dredges, and frames with bending members; static forces in machines with and without friction.
206. **Technical Sketching (2).** Lab. 6. Pr., EG 104 and EG 105. Technical lettering, block and architectural; types of illustrations, purpose and use; sketching techniques; pictorial drawings, oblique, isometric, dimetric, trimetric; perspective; shading; use of the airbrush; charts; reproductions of drawings.
306. **Advanced Graphics for Engineers (3).** Lec. 2, Lab. 3. Pr., EG 104, MH 361. Vector geometry, functional scales, nomography, combination of observations, empirical equations, and graphical calculus.

GRADUATE COURSES

612. **Design of Jigs and Fixtures (5).** Lec. 3, Lab. 6. Spring. Study of accepted types of jigs, fixtures and dies; production rates, expense and savings, automatic tooling design, indexing operations.
620. **Patents (5).** Winter. Patentability, claims, patent office procedures, foreign patents, role of patent attorney, patent drawings, sale and exploitation of patents.

English (EH)*Head Professor Patrick**Professors Amacher, Benson, Breyer, Brittin, Burnett, Current-Garcia,
Haines, McCann, Nist, and Woodall**Associate Professors W. S. Allen, Durant, Jones, Michael, O'Neal, and Wright
Assistant Professors Butler, Faulk, Hearn, Hudson, McLeod,**Patterson, Rose, and Stroud**Instructors Akins, J. W. Allen, Askins, Brown*, Cook*, Dockery*, Hill*, Kidd,
Lambert*, Lehmann, Logue, Moore*, Richardson, Roden*, Schneider,
Smith, J. Solomon*, O. Solomon, Turner*, Waters, and Welsh*

The requirements for the English major enrolled in the School of Arts and Sciences are stated on page 85, and for the English major enrolled in the School of Education, on page 112.

English Composition (101-102 or 103-104) is required of all students and is a prerequisite for all other courses in English.

101-2. English Composition (5-5). EH 101 pr. for EH 102. All quarters.

The essentials of grammar, composition, and reading.

103-4. English Composition for Superior Students (5-5). All quarters.

Reading and composition for superior students.

108. Classical Literature (5). All quarters.

The reading and discussion of significant works of classical Greek and Roman literature with emphasis on the western heritage of ancient thought.

141. Medical Vocabulary (3). All quarters.

Prefixes, suffixes, and the more common root words of medical terminology.

208. Literature of the Western World (3). General elective. Pr., EH 108 or EH 253. All quarters.

Eight significant literary works of the Western World which provide representative views of man in the Medieval, Renaissance-Reformation, and Eighteenth Century periods.

253. Literature in English (5). All quarters.

The literature of England from 1400 to 1800.

254. Literature in English (5). All quarters. Pr., EH 253.

English and American literature of the nineteenth and twentieth centuries.

301. Creative Writing (3). General elective. Fall, Spring.

The writing and criticizing of short stories. But the student may be permitted to write poetry, drama, or any other form of imaginative literature.

302. Creative Writing (3). General elective. Fall, Spring.

A continuation of English 301.

304. Technical Writing (3). All quarters.

Not open to students with credit in EH 345. Report writing for engineers.

310. Word Study (3). General elective. Fall, Spring.

The history of English words and their meanings with the object of improving the student's command of his language and illustrating for him some of the patterns in the development of human thought.

312. The European Novel (5). Spring.

The reading and analysis of significant novels by major European writers.

320. An Introduction to Drama (3). General elective. Winter.

Representative tragedies and comedies of Europe from antiquity to the present. Such figures as Sophocles, Moliere, Shakespeare and Ibsen will be considered.

325. The Short Story (5). Winter.

The development of the short story in America and Europe from the early nineteenth century to the present.

330. Medieval Literature in Translation (5). Spring.

Masterworks of English and European literature produced from 1250 to 1400.

340. The Classical Background (5). Fall. Not open to students with credit in EH 108.

Readings from the major Greek and Roman writers. The texts studied are chosen with particular attention to their subsequent influence upon English and American literature.

345. Business and Professional Writing (5). All quarters.

A course in practical composition including abstracting, correspondence, and reports for students in business administration and pre-professional science.

NOT OPEN TO ENGLISH MAJORS OR MINORS. Students cannot earn credit in this course and also in EH 304.

* Temporary.

350. Shakespeare's Greatest Plays (3). General elective. Fall. Not open to students with credit in EH 451-2.
Some of Shakespeare's masterpieces.
352. Contemporary Fiction (5). Fall.
American and British novelists from Lawrence to Faulkner.
353. Contemporary Drama (5). Spring.
Continental, British, and American dramatics from Ibsen to the present day.
357. Survey of American Literature (5). Fall.
American literature from the beginning to 1860.
358. Survey of American Literature (5). Spring.
American literature from 1860 to the present.
360. Continental Fiction (3). General elective. Winter.
Representative European short stories and novels.
361. History of English Drama (5). Winter.
English drama from the medieval period to 1900.
363. Eighteenth Century English Literature (5). Fall.
Poetry and prose from Dryden through Shenstone.
365. Southern Literature (3). General elective. Spring.
372. The American Novel (5). Winter.
The development of the American novel from the beginning to 1900.
381. The Literature of the Age of Reason (3). General elective. Fall.
Rationalism, its assumptions and effects, political, social, and scientific as seen in the works of such major eighteenth-century writers as Locke, Johnson, Burke, Voltaire, and Rousseau.
390. Advanced Composition (5). All quarters.
The practice and theory of expository writing; the command of language for the clear and forceful communication of ideas.
394. Introduction to Linguistics (5). Winter.
The phonological, morphological, and syntactical systems of late modern English.
401. Advanced English Grammar (5). Fall, Spring. Pr., junior standing.
Formal and functional grammar.
410. European Literature (5). Winter. Pr., junior standing.
The principal European literary figures and trends from the Renaissance to the present, with emphasis on the literature of Italy, France and Germany.
415. Great Nineteenth Century Writers (3 hrs.).
Selected works of five to eight important Nineteenth Century writers such as Balzac, Flaubert, Chekhov, Turgenev, James and Zola.
420. Great Twentieth Century Writers (3 hrs.).
Selected works by five to eight important Twentieth Century authors such as Conrad, Shaw, Faulkner, O'Neill, Joyce, Kafka, and Sartre.
425. Comedy and Satire (5). Pr., junior standing.
The theory and appreciation of two closely interrelated literary genres, based on the reading of representative examples from the literature of the Western World.
430. The Craft of Fiction (5). Pr., junior standing, EH 301-2, consent of instructor.
The writing of fiction.
441. History of the English Language (5). Spring.
The chronological development of the English language.
450. Contemporary Poetry (5). Winter. Pr., junior standing.
The chief modern poets of England and America.
- 451-2. Shakespeare (5-5). Fall, Winter, Spring. Pr., junior standing.
The first quarter deals with the plays written before 1600, emphasizing comedies; the second, with the plays written after 1600, stressing tragedies.
Credit for either or both of these courses excludes credit for EH 350.
456. The English Romantic Movement (5). Spring. Pr., junior standing.
Romantic poetry from Gray to Keats.
457. Victorian Literature (5). Winter. Pr., junior standing.
The major poets and non-fiction writers from 1830 to 1890.
459. Poetry and Prose of the English Renaissance (5). Fall. Pr., junior standing.
The non-dramatic literature of the Tudor Period.
463. Eighteenth Century English Literature (5). Spring. Pr., junior standing.
A survey of poetry and prose from Johnson through Blake.

481-2. English Novel (5-5). Fall, Winter. Pr., junior standing.

The first quarter provides a survey of the development of fiction from the Greek Romances down through the Renaissance and then concentrates on the great English novelists of the 18th Century. The second quarter provides a survey of the English novel from Jane Austin to Thomas Hardy.

491. American Poetry (5). Fall, alternate years. Pr., junior standing.

Major American poets from the Colonial period to 1920.

492. American Drama (5). Fall, alternate years. Pr., junior standing.

American dramatic and stage history from Colonial times to the nineteenth century, with emphasis on developing tastes and techniques.

495. Southern Literature (5). Spring. Pr., junior standing.

The poetry, fiction, and non-fiction prose writings in the South from Revolutionary times to the present, with major emphasis centering on Southern regional attitudes and trends. Not open to students with credit in EH 365.

498-99. Readings for Honors (5-5). Pr., junior standing with a minimum 2.0 overall average, a 2.5 average in at least five upper division English courses, and the consent of the English Department.

Individual reading programs in a specific period or phase of literature or language, as determined by the instructor and student. An honors essay and a written examination will be required.

GRADUATE COURSES**610. Introduction to Graduate Study (5). Summer, Fall, Winter.****611-12. Studies in the History and Interpretation of Literature (5-5). Summers only.****614. The Theory of Prose Fiction (5).**

Methods and techniques of prose fiction, particularly as they developed during the late nineteenth and early twentieth centuries. The course will focus on the close study of selected novels and criticism.

616-17. Studies in the American Language (5-5). Summers only.**620. The English Language, I: Old English (5). Fall.****621. The English Language, II: Middle and Modern English to 1500 (5). Winter. Pr., EH 620.****623. Beowulf (5). Winter. Pr., EH 620.****625. Medieval Literature (5). Fall.****626. Chaucer (5). Spring.****627. Linguistics, I: Phonology and Morphology (5). Fall, Summer.****628. Linguistics, II: Syntax and Grammar (5). Summer, Winter.****629. Linguistics, III: Formal Stylists (5). Spring.****631. Elizabethan and Jacobean Drama (5). Fall.****632. Spenser (5). Spring 1966. Alternates in Spring with 635.****633. Studies in the Poetry and Prose of the English Renaissance (5). Winter.****634. Poetry and Prose of the Seventeenth Century (5). Winter.****635. Studies in Shakespeare (5). Alternates in Spring with 632.****636. Milton (5). Spring.****640. Restoration and Eighteenth Century English Drama (5). Spring.****641. Studies in the Age of Pope (5). Fall.****642. Studies in the Age of Johnson (5). Winter.****650. Studies in English Romanticism (5). Winter.****652. Victorian Poetry (5). Spring.****653. Victorian Prose (5). Fall.****654. Studies in the Nineteenth Century English Novel (5). Spring.****660. Modern Poetry (5). Spring.****661. Modern Fiction (5). Winter.****662. Studies in Twentieth Century Literature (5). Fall.****670. American Literature of the Colonial and Revolutionary Periods (5). Spring.****671. Studies in American Literature, 1800-1860 (5). Alternates in Summers and Winters with 673.****672. Studies in American Literature, 1860-1914 (5). Fall.**

673. Studies in the Literature of the South (5). Alternates in Summers and Winters with 671.
680. The History of Literary Criticism (5). Alternates in Summers and Winters with 681.
681. The History of Literary Criticism (5). Continuation of EH 680. Alternates in Summers and Winters with 680.
- 684-85. Directed Individual Study (5-5).
690. Continental Romanticism (5). Cross-currents and influences among the literature of Europe during the Romantic Period, with attention to the effects of European Romanticism on English writers.
699. Research and Thesis (5).
799. Research and Dissertation (5).

Foreign Languages (FL)

Head Professor Peak

Research Professor of Comparative Linguistics Skelton

Associate Professors Hamilton and Whartenby

Assistant Professors Helmke and Warbington

*Instructors Calvez, Fijan, Fugler, Hickman, Lewis, Lott, Murphy
Vandegrift, Walters, and Wolverton*

Students who have satisfactorily completed two years of a foreign language in high school should continue that language on the intermediate level. College credit will not be granted for an elementary course when the student has received two years credit for that language in high school, except by special permission of the Registrar and Department of Foreign Languages with the approval of the student's dean.

French

121. Elementary French I (5). To give the student the fundamentals of the French language together with as much simple reading as time will permit. Constant stress will be placed on oral and aural practice.
122. Elementary French II (5). Pr., FL 121 or equivalent. A continuation of FL 121.
221. Intermediate French I (5). Pr., FL 122 or equivalent. Provides practice in reading current French. Special emphasis is placed on the acquisition of vocabulary and on oral practice.
222. Intermediate French II (5). Pr., FL 221 or equivalent. An introduction to French literature. Representative works of moderate difficulty and high literary value will be read. Oral practice will be continued.
321. Advanced French I (5). Pr., FL 222 or equivalent. Outstanding prose works, especially short stories and novels. Continued emphasis on vocabulary building and oral practice.
322. Advanced French II (5). Pr., FL 222 or equivalent. A continuation of FL 321.
421. Contemporary French Literature I (5). Pr., FL 222 or equivalent. Selected readings in the literature of the nineteenth and twentieth centuries. Advanced practice in conversation.
422. Contemporary French Literature II (5). Pr., FL 222 or equivalent. A continuation of FL 421.
423. Survey of French Literature (5). Pr., FL 422 or dept. approval. The development of French literature from the Chansons de geste through the classical period.
424. Survey of French Literature (5). Pr., FL 422 or dept. approval. A continuation of FL 423. The development of French literature from Romanticism to the modern period.
427. Independent Work in French I (5). Pr., FL 423 or FL 424 or dept. approval. For the superior student majoring in French. A reading course to be completed with a term paper.
428. Independent Work in French II (5). Pr., FL 423 or FL 424 or dept. approval. For the superior student majoring in French. A reading course to be completed with a term paper.

Spanish

131. **Elementary Spanish I (5).** Structure of the Spanish language, with practice in speaking, understanding, reading, and writing.
132. **Elementary Spanish II (5).** Pr., FL 131 or equivalent. A continuation of FL 131.
231. **Intermediate Spanish I (5).** Pr., FL 132 or equivalent. Designed to acquaint the student with the civilization of Spain while providing practice in reading and speaking.
232. **Intermediate Spanish II (5).** Pr., FL 231 or equivalent. Spanish literature. Representative works of outstanding Spanish writers will be examined.
331. **Advanced Spanish I (5).** Pr., FL 232 or equivalent. Recognized works of Spanish and Spanish-American writers with a review of Spanish grammar and practice in composition.
332. **Advanced Spanish II (5).** Pr., FL 232 or equivalent. A continuation of FL 331. Continued emphasis on vocabulary building and oral practice.
431. **Contemporary Spanish Literature I (5).** Pr., FL 232 or equivalent. Selected readings in the literature of the nineteenth and twentieth centuries. Advanced practice in conversation.
432. **Contemporary Spanish Literature II (5).** Pr., FL 232 or equivalent. Selected readings in Spanish-American literature of the nineteenth and twentieth centuries. Advanced practice in conversation.
433. **Survey of Spanish Literature (5).** Pr., FL 432 or dept. approval. The development of Spanish literature from Poema del mio Cid through the Golden Age.
434. **Survey of Spanish Literature (5).** Pr., FL 432 or dept. approval. A continuation of FL 433. The development of Spanish Literature from the Decadencia to the contemporary period.
437. **Independent Work in Spanish I (5).** Pr., FL 433 or FL 434 or dept. approval. For the superior student majoring in Spanish. A reading course to be completed with a term paper.
438. **Independent Work in Spanish II (5).** Pr., FL 433 or FL 434 or dept. approval. For the superior student majoring in Spanish. A reading course to be completed with a term paper.

German

151. **Elementary German I (5).** The structure of the German language, with practice in speaking, understanding, reading, and writing.
152. **Elementary German II (5).** Pr., FL 151 or equivalent. A continuation of FL 151.
251. **Intermediate German I (5).** Pr., FL 152 or equivalent. Provides the student with an understanding of the civilization of Germany while providing practice in reading and speaking the language.
252. **Intermediate German II (5).** Pr., FL 251 or equivalent. German literature. Representative works of various German authors will be studied.
351. **Advanced German I (5).** Pr., FL 252 or equivalent. Recognized works of German writers, with a review of German grammar and practice in composition.
352. **Advanced German II (5).** Pr., FL 252 or equivalent. A continuation of FL 351. Continued emphasis on vocabulary building and oral practice.
451. **Contemporary German Literature I (5).** Pr., FL 252 or equivalent. Selected readings in German literature of the nineteenth and twentieth centuries. Advanced practice in conversation.
452. **Contemporary German Literature II (5).** Pr., FL 252 or equivalent. A continuation of 451.
453. **Survey of German Literature (5).** Pr., FL 452 or dept. approval. The development of German literature from the beginnings through the Age of German Classicism (Schiller and Goethe).
454. **Survey of German Literature (5).** Pr., FL 452 or dept. approval. A continuation of FL 453. The development of German literature from the Age of Romanticism up to the present.
457. **Independent Work in German I (5).** Pr., FL 453 or FL 454 or dept. approval. For the superior student majoring in German. A reading course to be completed with a term paper.

458. Independent Work in German II (5). Pr., FL 453 or FL 454 or dept. approval. For the superior student majoring in German. A reading course to be completed with a term paper.

Italian

241. Elementary Italian I (5). Pr., permission of the instructor. The structure of the Italian language, with practice in speaking, understanding, reading, and writing.
242. Elementary Italian II (5). Pr., FL 241 or equivalent. A continuation of FL 241.
341. Intermediate Italian I (5). Pr., FL 242 or equivalent. The civilization and the literature of Italy while providing practice in reading and speaking Italian.

Portuguese

261. Elementary Portuguese I (5). Pr., permission of the instructor. The structure of the Brazilian language, with practice in speaking, understanding, reading, and writing.
262. Elementary Portuguese II (5). Pr., FL 261 or equivalent. A continuation of FL 261.
361. Intermediate Portuguese I (5). Pr., FL 262 or equivalent. Brazilian civilization and Luso-Brazilian literature.

Russian

171. Elementary Russian I (5). The Russian language, with practice in reading, understanding, speaking, and writing.
172. Elementary Russian II (5). Pr., FL 171 or equivalent. A continuation of FL 171.
271. Intermediate Russian I (5). Pr., FL 172 or equivalent. Russian civilization. Emphasis on acquisition of vocabulary and practice in reading.

GRADUATE COURSES

601. Linguistic Science (5). Pr., permission of instructor. The various aspects and areas of linguistic study, including an examination of language distribution, relationships, types, changes and development, and a brief introduction to phonetic structure, grammatical forms, and syntax.
605. Indo-European Linguists (5). Pr., permission of instructor. Historical linguistics involving the reconstruction of proto Indo-European and the reflexes in the dialects, especially Latin, Greek, Sanskrit, and Gothic.

Forestry (FY)*

*Professors DeVall, Christen, Hodgkins, and Johnson
Associate Professor Posey
Assistant Professors Beals, DeBrunner, and Larsen*

101. Introduction to Forestry (3). Fall. For freshmen. Nature and importance of forestry, wood technology, and the related fields of natural resource management. Employers, compensation, and career ladders in these areas. Nature of professionalism.
104. Forest Cartography (2). Lab. 6. Use of drafting instruments, engineering lettering, conventional map signs and symbols and application to planimetric and topographic maps, map design and grids.
105. Forestry Convocation (0). Fall, Winter, Spring. A semi-quarterly forum required of all forestry students except in summer quarters. Visiting lecturers from all segments of federal, state, and private forestry will discuss topics of importance to the forest economy and interest to students.
- 201-2. Dendrology (3-3). Lec. 1, Lab. 6. Fall, Winter. Pr., BY 102, or permission of instructor. Identification, taxonomic and ecological characteristics, and the distribution of important forest trees of the U.S.A. One quarter devoted to Angiosperms and one quarter to Gymnosperms.
203. Silvics (5). Lec. 3, Lab. 6. Spring. Pr., AY 305, FY 202. Influence of site factors on the reproduction, growth, development, and characteristics of forest vegetation and the effect of forest cover on the site. Classification.

* The prerequisites may be waived, by permission of the instructor concerned, for junior and senior students in other departments.

- 204. Forest Mensuration (5). Lec. 3, Lab. 6. Fall. Pr., FY 202, CE 201.** Measurement theory; methods and equipment used in measuring trees and stands; units of measure used in forestry; log rules and volume tables; condition class mapping; elementary timber estimating; stand and stock tables.
- 205. Wood Identification and Uses (5). Lec. 3, Lab. 6. Spring. Pr., FY 201 or FY 202.** Identification of the commercial woods of the United States by macroscopic features. Elementary wood anatomy, sufficient to permit an understanding of wood properties and why individual woods are suited to some uses and not to others. Introduction of the student to the major uses of wood. The basic principles of lumber grading.
- 206. Wood Measurements (3). Lec. 2, Lab. 3. Winter. Pr., MH 107 or equivalent.** Wood measurements oriented toward the needs of students in wood technology.
- 302. Forest Fire Control and Use (3). Lec. 2, Lab. 3. Winter. Pr., junior standing.** Forest fire protection. Use of fire as a silvicultural tool. Public relations problems.
- 303. Forest Recreation (3). Lec. 2, Lab. 3. Pr., junior standing.** Planning and administration of recreation in forest land management.
- 309. Sampling (3). Lec. 2, Lab. 3. Winter. Pr., MH 162 or consent of instructor.** Basic statistical and sampling concepts and procedures as applied to forestry problems.
- 310. Advanced Mensuration (3). Lec. 2, Lab. 3. Spring. Pr., FY 309.** Statistical decision theory. Stratified sampling, including testing for effectiveness of stratification, allocation of the sample, and sample size. Inventories with probability proportional to size (point sampling). Forest growth and yield. Nature and use of yield tables. Stand projection methods. Growth percent.
- 311. Wood Technology I (5). Lec. 3, Lab. 6. Fall. Pr., FY 101 and one quarter of Dendrology.** Identification of commercial woods of industry by microscopic features. Basic microtechnique. Wood anatomy and properties.
- 313. Farm Forestry (5). Lec. 3, Lab. 4. Fall, Winter. Pr., sophomore standing.** (Not open to students in the degree Forestry curricula.) The place of farm forests in agricultural economy. The application of forestry principles to the problems of the farm woodland, especially as they relate to Alabama conditions.
- 316. Forest Economics (3). Lec. 3. Winter. Pr., FY 101, AS 202, junior standing.** Fundamentals of economics as applied to the business of forestry. Supply, demand and price relationships and predictions for the future. Input-output relationship in production.
- 330. Forest Products (5). Lec. 3, Lab. 6. Pr., FY 205 or FY 311.** Specifications, grading and manufacture of wood products derived from forest lands, including an introduction to pulp and paper manufacture and other chemical and mechanical processes utilizing wood.
- 390. Field Mensuration (5). Lec. 1, Lab. 12. Summer. Pr., FY 101, FY 204.** Practical experience in timber cruising and field application of forest mensuration principles.
- 391. Forest Engineering (5). Lec. 1, Lab. 12. Summer. Pr., FY 101, CE 201.** Road location, staking and computation of cuts and fills. Surveying and mapping of forest properties. Topographic surveying and mapping for recreational purposes.
- 393. Alabama Forest Industries (3). Lec. 1, Lab. 6. Summer. Pr., FY 101.** Inspection and study of logging operations and primary manufacturing of forest products.
- 396. Forest Site Evaluation (2). Lec. 1, Lab. 3. Summer. Pr., FY 203.** Theoretical and field training in the classification and evaluation of forest habitats.
- 397. Forest Regeneration (3). Lec. 1, Lab. 6. Summer. Pr., FY 101, FY 203.** Field observation and evaluation of natural and artificial methods of regeneration of forest types, with emphasis on ecological factors.
- 405. Lumber Grading (3). Lec. 2, Lab. 3. Fall.** Lumber grading, including hardwoods and softwoods; yard, structural and forestry grades.
- 407. Forest Management (5). Lec. 5. Winter. Pr., FY 420, FY 316 and junior standing.** General principles applicable to the organization, administration and regulation of forest properties primarily for the production of crops of timber.
- 408. Logging (3). Lec. 2, Lab. 3. Fall. Pr., FY 101.** Logging methods and the factors affecting the costs in each phase of logging. Field practice given in the safe use of mechanical logging equipment.
- 413. Microtechnique of Hard Materials (5). Lec. 1, Lab. 12. Fall. Pr., FY 311, or permission of instructor and junior standing.** Preparation and sectioning of hard materials for microscopic study. Care and use of the sliding microtome and diamond saw, staining, counterstaining, and mounting of sections.

414. Regional Silviculture (3). Lec. 3. Fall. Pr., FY 420 and junior standing. The principal forest type groups, their site occurrence, growth, value, and current silvicultural problems and practices, of each of the forest regions of the United States.
415. Range Management (2). Lec. 2. Pr., FY 203, or BY 413, and junior standing. Survey of range management as applied to forest properties.
417. Photogrammetry (5). Lec. 3, Lab. 6. Winter. Pr., FY 310 and junior standing. Use of aerial photographs in Forestry. Particular emphasis is placed on specifications for forestry photographs, basic map control, planimetric mapping, form-line mapping, timber type mapping and timber volume estimation.
418. Advanced Forest Management (3). Lec. 1, Lab. 6. Spring. Pr., FY 407 and junior standing. Review of steps and procedures in preparation of management plans; preparation of management plans for selected areas.
420. Silviculture (5). Lec. 3, Lab. 6. Fall. Pr., FY 203 or BY 413 and junior standing. Methods of controlling establishment, composition, growth, and quality of forest stands.
421. Forest Research Methods (3). Lec. 2, Lab. 3. Spring. Pr., FY 309 and junior standing. Review of statistical and sampling methods. Experimental design and analysis of data.
425. Wood Gluing and Lamination (5). Lec. 3, Lab. 6. Winter. Coreq., FY 311, Pr., PS 205 and junior standing. Types and characteristics of woodworking glues. The theory, design, and manufacture of laminates and other glued products. The student will be introduced to research techniques and procedures by pursuing a specific study that will culminate in a comprehensive report.
427. Forest Valuation (5). Lec. 5. Fall. Pr., FY 204, FY 316 and junior standing. Bases and methods of determining the value of stumpage and land. Calculation of taxes on and damages to a forest enterprise. Principles of insurance as applied to a forest enterprise. Computation of financial maturity of trees and stands.
429. Forest Tree Nursery Management (3). Lec. 2, Lab. 3. Spring. Pr., FY 397 and junior standing. Principles and practices applicable to the operation of a commercial forest tree nursery. Soil Management techniques directly related to seedling quality will be stressed.
430. Wood Technology II (5). Lec. 3, Lab. 6. Fall. Pr., FY 311, CH 203, PS 205, and junior standing. Physical and chemical nature of wood substances; wood-liquid relations, thermal and electrical properties, chemical processing of wood.
431. Wood Technology III (5). Lec. 3, Lab. 6. Spring. Pr., FY 311, PS 205, and junior standing. Mechanical properties of wood, factors affecting the strength of wood, principles used in design of wood structures.
432. Seasoning and Preservation of Wood (5). Lec. 5. Winter. Pr., FY 311 and junior standing. Principles and practices of seasoning and impregnation of wood, study of wood destroying agencies.
433. Seasoning and Preservation Laboratory (2). Lab. 6. Spring. Pr., FY 432 and junior standing. Required for wood technology majors only. Laboratory study of techniques and equipment used in the seasoning and impregnation of wood.
434. Forest Policy (3). Lec. 3. Fall. Pr., FY 101 and junior standing. Development of forest policy in the United States against the background of cultural heritages and national economic situations as causative factors. Some time is devoted to several basic considerations important in developing forest policy.
435. Forest Products Marketing (5). Lec. 3, Lab. 6. Winter. Pr., FY 101, FY 204 and junior standing. Introduction to the timber products capable of being harvested from the forests, with special emphasis on the marketing channels through which they move. Work in lumber specifications, log scaling and grading supplemented by sawmill demonstrations. Product specifications and comparative prices and production costs.
436. Forest Watershed Management (5). Lec. 4, Lab. 3. Pr., FY 203 or BY 413 and junior standing. Influence of forests and forestry practices upon streamflow.
440. Farm Forest Management I (3). Lec.-Dem. 4. Pr., graduate standing. Field demonstrations to be arranged. Methods of measuring forest products and computing volumes and growth of trees and stands applicable to forest practice in farm woodlots. Methods of thinning, stand improvement, and harvesting, applicable to woodlot management.

450. Small Woodland Management (5). Summer. For majors in Education or Agricultural Education, by consent of instructor.
The importance of small forest holdings in the national, regional, and state economies. An evaluation of trends in ownership patterns and their related problems. Characteristics used in recognition of forest stands comprising major forest types. Principles of forest management and their application.
480. Senior Thesis (5). Pr., senior standing.
A problem in the student's area of interest. Will test ability of student to do thorough library research as well as any needed laboratory or field work. A comprehensive report, written in the style of a graduate thesis, is required.
490. Seminar in Forestry (1). Spring. Pr., senior standing.
Advanced study of current literature and recent developments, with written and verbal reports on selected problems. Required of all graduate students in forest management and wood technology and all seniors in the Honors Program.

GRADUATE COURSES

601. Wood Chemistry (5). Lec. 2, Lab. 9. Spring. Pr., FY 430, CH 203.
Detailed study of the physical and chemical nature of cellulose and modified cellulose and their derivatives. Study of the lignocellulose complex. The chemical analysis of wood.
610. Forest Tree Improvement (5). Lec. 4, Lab. 3. Spring. Pr., ZY 300 or consent of instructor.
Principles of heredity as applied to forest trees and their management. Review of current knowledge in tree improvement. Principles of forest tree breeding. Study and evaluation of activities designed to produce genetically improved trees.
611. Forest Soils (5). Lec. 3, Lab. 6. Fall. Pr., AY 304 or AY 305.
Importance of morphological, physical and chemical properties of forest soils in relation to growth of trees. Classification of forest soils on the basis of productivity. Special emphasis on forest soils in the southern pine region.
617. Forest Inventory (5). Lec. 4, Lab. 3. Winter. Pr., FY 417, FY 310.
Design and analysis of large scale timber volume and growth appraisals, continuous forest inventory and use of electronic computing equipment in forest inventory operations.
640. Farm Forest Management II (3). Lec. 4. Pr., FY 440 and graduate standing.
Organization of the farm woodlot for continuous forest production. Methods of balancing cut and drain, and plans for the efficient administration of the woodlot as a business.
691. Directed Study (1-5). All quarters. Directed Study limited to a maximum of 5 hours in any specified area and to a maximum of 15 hours in all areas as credit towards the Master of Science degree.
Areas of Directed Study: (A) Forest Management, (B) Forest Economics, (C) Forest Sampling, (D) Regression Analysis, (E) Linear Programming, (F) Forest Photogrammetry, (G) Forest Mensuration, (H) Forest Engineering, (I) Forest Soils, (J) Forest Ecology, (K) Forest Genetics, (L) Tree Physiology, (M) Wood Anatomy & Quality, (N) Uses of Wood & Derived Products, (O) Chemistry of Wood Glues, Finishes, & Impregnants, and (P) Timber Physics.
695. Special Problems (3 to 8 hrs.). All quarters.
A special problem in forestry or wood utilization. Such a problem will be of lesser magnitude than a thesis but will test the student's ability to do thorough library research as well as any needed laboratory or field work, and to prepare a comprehensive report on his findings. The work may be spread over more than one quarter, but shall be limited to a total of eight quarter hours.
699. Research and Thesis. Credit to be arranged.

Foundations of Education (FED)*Head Professor Willers**Professors Holloway and Punke**Associate Professor Phillips**Assistant Professors Lauderdale, Leischuck, Shantz, Shapiro, Todd, and Young**Instructors Childs, Easley, and McCullers**Visiting Professor Gomillion***Undergraduate**

200. Foundations of Education (4). Lec. 3, Lab. 2. All quarters. Pr., FED 213 or equivalent; Pr., or coreq., FED 214 or equivalent.
The social, philosophical and historical foundations upon which education is based. Designed to provide the student with an overview of the educational enterprise and a basis for depth study of the areas covered. Laboratory experiences* involving observations and participation in actual work or an elementary or secondary school are provided.

* See page 111 for complete description.

213. **Human Development (5).** Physical, psychological, and social development of school age children. (Not open to students with credit in PG 212.)
214. **Educational Psychology (5).** Pr., PG 212 or FED 213. Intellectual development of school age children emphasizing experimental foundations of complex learning.
300. **Principles and Practices in Education (4).** Lec. 3, Lab. 2. All quarters. Pr., FED 200 or equivalent, FED 213 and 214 or equivalent, admission to teacher education. Purposes of public education in a democracy. Study of curriculum, organization and administration of public education, school personnel, school finance and the school plant. The relation of theory to practice. Lectures, discussion techniques, demonstrations and laboratory experiences* in the public schools.
490. **Evaluation in Education (3).** Lec. 2, Lab. 2. All quarters. Pr., senior standing. Analysis of methods, procedures, and evaluative instruments for determining teaching effectiveness and the attainment of educational goals. Examination of theories and methods of testing, measurement, self-evaluation, and pupil accounting. Techniques, uses and interpretation of educational statistics. Laboratory experiences* in the public schools.

Advanced Undergraduate and Graduate

420. **Educational Sociology (5).** Pr., FED 214 or equivalent, FED 200 or equivalent, junior standing. Analysis of the school as a social institution. Group interaction, formal and informal structure and organization, and the relationship of education to other social institutions.
434. **Personality Dynamics and Effective Behavior (5).** Pr., junior standing and ten hours of psychology. Analysis of adaptive and maladaptive behavior. Not open to students majoring in psychology.
451. **Advanced Educational Psychology (4).** Lec. 3, Lab. 3. Pr., junior standing and nine hours of psychology. Analysis of conceptual learning and problems in programmed instruction.

Graduate

600. **Education in Modern Society (5).** Pr., graduate standing. (Not open to students with credit in ED 635.) Analysis and interpretation of the interaction of historical, philosophical and sociological considerations affecting education in modern society.
601. **Social Foundations of Education (5).** Pr., FED 600. (Not open to students with credit in AD 601.) Man as a social being, an analysis of his relationships, his social inventions, including community organization and structure, mores, value patterns, decision making and their significance for education.
634. **History of Education (5).** Pr., FED 600. The emergence of education as a formal institution, tracing its historical development from early Greek times to the present and emphasizing the historical antecedents which have helped to shape the role and functions of education in Western culture.
636. **Philosophy of Education in America (5).** Pr., FED 600. Major American contributions to the philosophy of education and their influence on educational practice. Need for, and procedures in, reexamining concepts in the light of recent scientific and cultural developments.
637. **Development and Status of Educational Philosophy (5).** Pr., FED 600; FED 636 or consent of department chairman. Development of philosophy of education from the standpoint of its implications for educational practice. Several patterns of thought are considered including supernaturalism, idealism, realism, humanism, communism, existentialism, and experimentalism.
639. **Comparative Education (5).** Pr., FED 600; two quarters of graduate study or consent of department chairman. Comparison among the educational systems of leading foreign countries and the United States, giving attention to the historic origins of different systems and to their present sociological and philosophical significance.
645. **Current Problems in Education (5).** Pr., teaching experience. Interpretation of current issues concerning education. Problems of administration, supervision, curriculum and their relationship to the total educational program are studied.
646. **Studies in Education (1-3).** Pr., one quarter of graduate study. Study of a problem using research techniques, to be selected in consultation with the supervising professor. A problem should be selected which will contribute to the program of the student. (Credit in ED 651 prior to 1960 excludes credit in this course.)

* See page 111 for complete description.

- 647. Foundations in Curriculum and Teaching (5).** Development of curriculum patterns and teaching materials reviewed in terms of recent investigations and experimentation; conflicting conceptions of the nature of the curriculum and the sociological, philosophical and psychological implications of these conflicts; methods of curricular reorganization in the elementary and secondary schools.
- 661. Research and Experimentation in Education (5).** Emphasis given to research methods, design of experiments, and evaluation; data sources, research planning, elements of scientific method and proposal writing. Current trends in educational research.
- 671. Graduate Seminar (5). Pr., Masters Degree and consent of department chairman.** Social issues and their implications for education. Examination of issues using theories and techniques of analysis from the social sciences and other organized disciplines.
- 672. Statistical Methods in Education (5).** The need and importance of applying statistical methods to the study of educational problems, statistical methods appropriate to education, and interpretation of meanings of statistical analyses.
- 673. Research and Experimental Design (5). Pr., FED 672.** Relationship of design to validity; significance of variables, testing hypotheses, evaluation of research and research findings.
- 675. Advanced Statistical Methods in Education (5). Pr., FED 672.** Analysis of variance and covariance; correlational analysis and linear regression. Simple and complex factorial designs applied to educational research.

Geography (GY)

Professor Richardson

*Assistant Professors Bagwell and Dorman
Instructor Bushey*

- 102. Principles of Geography (5). Not open to juniors or seniors.** Man and his works in relation to the Earth as a planet, location, climate, land forms, water bodies, minerals, soils, biota.
- 103. Economic Geography (5). Not open to juniors or seniors.** An elementary, systematic study of distribution and environmental relations of man's principal economic works. Designed primarily for business administration students.
- 201. Weather and Climate (5). Pr., sophomore standing.** Weather and climate, their causes and controls. Characteristics and distribution of world climates with their economic and social effects.
- 301. Geo-Political Basis of World Powers (3). General elective. Pr., junior standing.** The interaction between the natural-physical environment and the international activities of world powers. Emphasis is placed upon the changing geographic and economic patterns in world affairs.
- 303. Geography of the Soviet Union (3). General elective. Pr., junior standing.** The physical and human geography of the U.S.S.R. and its role in international affairs.
- 304. Geography of South America (5). Pr., junior standing.** A regional survey of economic and social developments, resources and products.
- 305. Geography of North America (5). Pr., junior standing.** Human-use regions, resources, social and economic developments will be studied.
- 306. Geography of Europe (5). Pr., junior standing.** The influences of climate, surface features, and natural resources on the distribution of peoples, their industries and routes of trade. Consideration will be given to each country within its regional setting and to the relationship of Europe to the remainder of the world.
- 307. Geography of Asia (5). Pr., junior standing.** Climate, topography, and natural resources and their influence upon the distribution of peoples, their industries and commerce.
- 308. Geography of Africa (5). Pr., junior standing.** The principal regions of Africa with particular emphasis on the areas and countries of greater economic and international importance.
- 404. Physical Geography of the World (5). Pr., senior standing.** Selected elements of physical geography. Soil, water, minerals, flora and fauna will be studied.
- 405. Cultural Geography of the World (5). Pr., senior or graduate standing.** The influence of physiographic factors in the social, economic and political development of peoples and states.

407. **World Resources and Their Utilization (5).** Pr., junior standing.
The world's principal natural resources are studied primarily from the geographic point of view (location, transportation, topography, water supply, power sources, climate, etc.).
410. **Geography of Alabama (5).** Pr., junior standing.
The geographic characteristics of the State.
650. **Geography Seminar (5).** Pr., graduate standing or consent of instructor.
Designed for students engaged in intensive study and analysis of problems in geography.

Geology (GL)

*Head Professor Carrington
Assistant Professor Cahoon*

101. **Introductory Geology I (5).** Lec. 4, Lab. 2. All quarters.
The origin and classification of rock-forming and ore minerals. Sedimentary, metamorphic, and igneous processes, and classification of rocks that result from such processes. Rock deformation and mountain building.
[NOTE: GL 101 and 102 (Introductory GL I and II) replace GL 101 (Principles and Processes of Geology) taught during the Academic year 1967-68. Credit will not be allowed for both Principles and Processes of Geology and Introductory Geology I and II.]
102. **Introductory Geology II (5).** Lec. 4, Lab. 2. All quarters.
Geomorphology through study of weathering, mass movement, formation of soils, and the erosional, transportational, and depositional aspects of groundwater, streams, oceans, glaciers, and wind.
[NOTE: GL 101 and 102 (Introductory GL I and II) replace GL 101 (Principles and Processes of Geology) taught during the Academic year 1967-1968. Credit will not be allowed for both Principles and Processes of Geology and Introductory Geology I and II.]
103. **Historical Geology (5).** Lec. 4, Lab. 2. Spring. Pr., GL 101.
Methods of geochronometry, with emphasis on the fossil record. Survey of the physical history of the Earth, with particular attention to the U.S.
201. **Geological Field Methods (2).** Lab. 5. Winter. Pr., GL 101 or 102.
The instruments and methods used in geological field mapping.
301. **Mineralogy I (5).** Lec. 4, Lab. 2. Fall. Pr., CH 102 or equivalent.
Crystal chemistry and crystallography.
302. **Mineralogy II (5).** Lec. 4, Lab. 2. Winter. Pr., GL 301.
Identification, description, and classification of representative minerals and mineraloids.
311. **Invertebrate Paleozoology (5).** Lec. 4, Lab. 2. Fall. Pr., BY 101, ZY 101 or equivalent.
Identification, description, and classification of representative fossils of several phyla of the Animal Kingdom.
312. **Paleobotany (5).** Lec. 4, Lab. 2. Winter. Pr., BY 101, ZY 101, or equivalent.
Identification, description, and classification of representative fossils of several phyla of the Plant Kingdom.
342. **Geology (3).** Lec. 3. Pr., CH 104 or sophomore standing.
General geology including the common minerals and rocks, geologic processes, and a brief survey of historical geology. Credit for GL 101, GL 102, or GL 103 excludes credit for this course.
401. **Sedimentation-Sedimentary Petrology (5).** Lec. 4, Lab. 2. Fall. Pr., GL 302.
Principles involving transportation and deposition of marine and non-marine sediments, and megascopic description and classification of rocks that result from such processes.
402. **Structural Geology-Metamorphic Petrology (5).** Lec. 4, Lab. 2. Winter. Pr., GL 302.
Principles of rock deformation, and megascopic description and classification of geological structures and rocks that result from deformative forces.
403. **Igneous Geology and Petrology (5).** Lec. 4, Lab. 2. Spring. Pr., GL 302.
Principles of intrusive and extrusive igneous activity, and megascopic description and classification of rocks that result from such processes.
411. **Stratigraphy (5).** Lec. 4, Lab. 2. Spring. Pr., GL 312, 401, 402, 403.
Descriptive geology pertaining to the discrimination, character, thickness, sequence, age, and correlation of rocks. Particular emphasis on formation, composition, sequence, and correlation of stratified rocks.
421. **Economic Geology I (5).** Lec. 4, Lab. 2. Fall. Pr., GL 402, 403.
The origin and classification of mineral deposits formed by igneous and metamorphic activity. Introduction to methods of prospecting.
422. **Economic Geology II (5).** Lec. 4, Lab. 2. Spring. Pr., GL 401.
The origin and classification of mineral deposits formed by surficial processes. Introduction to methods of prospecting.

431. Research Methods and Application (1-6). All quarters. Pr., senior, major in geology, and presentation of acceptable proposal.

Introduces the student to actual research projects and encourages his participation in some phase of original research under supervision of a senior investigator. Credit evaluation of the project is determined by the departmental faculty on the basis of the formal presentation of the problem and the probable method(s) of investigation. May be taken more than one quarter for a maximum cumulative credit of six credit hours.

Health, Physical Education and Recreation (HPR)

Head Professor Fourier

Professors Francis, Land, Means, and Umbach

Associate Professors Evans, Fitzpatrick, and Young

Assistant Professors Bengtson, Dragoian, Martincic, Puckett, Rosen, Turner, Waldrop, and Washington

Instructors Barrington, Bizioia^o, Bond, Bowline^o, Brand^o, Branham, Bridges, Chapman^o, Clacker^o, Davalos, Ginanni^o, Hill, and Kent

The instructional program of the Department of Health, Physical Education, and Recreation comprises (1) courses in physical education for all students, (2) courses for the major and minor in health and physical education, and (3) professional courses for students in preparation for teaching.

In satisfying the six-quarter requirement in Physical Education, unless deferment is recommended by the student's Dean, all undergraduate students under 26 years of age must register for physical education in the first and succeeding quarters of residence until this requirement has been met. Any deficiencies in physical education incurred at Auburn University and/or elsewhere before the student reaches age 26 must be cleared prior to graduation. Only one credit per quarter is permitted or transferable to meet the six-quarter requirement.

Course Requirements (Men).—First quarter freshmen with "A" classification are required to take PE 100. Students placed in the "B" health classification may be required to take PE 100, depending upon their physical disability.

In order to receive a well-rounded program of activities, students are required to pass one course in each of the areas listed below. Successful completion of intermediate swimming is required of all men students. However, if a student must take two swimming courses to meet the aquatic requirement, he may omit one course in any area except Fundamentals.

Area Requirements (Men).—Fundamentals, Team Sports or Rhythms, Individual Sports, Combative Sports, Aquatics^{oo}, and Gymnastics.

Varsity Sports (Men).—A student who has received credit for varsity athletics may not repeat the same area in physical education activities.

Course Requirements (Women).—Swimming^{oo}.

Health Science (Women).—Three hours required of freshmen women. Health Science 110, 3 credits, is recommended although 111, 112, and 113 will satisfy requirement.

Credit.—All courses carry one quarter hour credit per quarter (maximum of six quarter hours allowed on degree). No duplication of courses is permitted except in varsity sports, or for students who have health classifications of "C".

Course No.

Fundamentals

100	Basic Physical Education
Adaptive	
105	Sports Education

Aquatics

120	Beginning Swimming
220	Intermediate Swimming
222	Synchronized Swimming
223	Senior Life Saving
320	Water Safety

Course No.

Combative Sports

130	Boxing
131	Fencing
132	Wrestling
134	Judo
332	Varsity Wrestling

Gymnastics

140	Apparatus
141	Trampoline
142-143	Tumbling

^o Temporary.

^{oo} Students currently certified as Water Safety Instructors by the American Red Cross are exempt from this requirement.

Course No.		Course No.	
Rhythms		165	..... Track
170-171	Folk Dance	166	..... Weight Training
172-173	Contemporary Dance	168	..... Basic Equitation
174-175	Tap Dance	357	..... Varsity Golf
176-177	Social Dance	363	..... Varsity Tennis
178	Ballet	365	..... Varsity Track
Individual Sports		366	..... Varsity Cross Country
150	Angling		
151-152	Archery	180-181	..... Basketball
153-154	Badminton	182-183	..... Soccer
155-156	Bowling	184-185	..... Softball
157-158	Golf	186	..... Speedball
159	Camping	187	..... Touch Football
160	Recreational Sports	188-189	..... Volleyball
161	Family Recreation	380	..... Varsity Basketball
162	*Rifle Marksmanship	384	..... Varsity Baseball
163-164	Tennis	387	..... Varsity Football

110. Health Science (3).

Basic understanding concerning sound health practices and protection. Physical, mental, and social aspects of personal and community health are considered.

111-112-113. Health Science (1-1-1).

(111) Concepts related to health and college life, nutrition, maintaining the body, and consumer health choices; (112) mental health, stimulants and depressants, family living, and chronic-degenerative diseases; (113) community health problems, communicable diseases, and safety education.

Courses for the Major and the Minor

106. **Developmental Activities: Theory and Techniques (2).** Lec. 1, Lab. 4. Body mechanics, calisthenics, movement fundamentals, weight training.
133. **Combatives: Theory and Techniques (2).** Lec. 1, Lab. 4. Boxing, fencing, and wrestling.
167. **Individual and Dual Sports: Theory and Techniques (2).** Lec. 1, Lab. 4. Archery, badminton, bowling, golf, and tennis.
190. **Apparatus and Tumbling: Theory and Techniques (2).** Lec. 1, Lab. 4. Apparatus, stunts, tumbling, pyramids, and trampoline.
191. **Team Sports: Theory and Techniques (2).** Lec. 1, Lab. 4. Basketball, field hockey, soccer, softball, speedball, and volleyball.
201. **Introduction to Physical Education (5).** Lec. 5. Fall, Winter, Spring. Physical education from the earliest periods to the present. Emphasis is placed on the physical, biological and psychological principles of physical education.
202. **Basketball (Men) (3).** Lec. 2, Lab. 2. Fall. The fundamental skill techniques of basketball—offense, defense, and strategy.
206. **Football (Men). Lec. 2, Lab. 2. Winter.** The fundamentals of football and the different types of offense, defense, team strategy and generalship.
212. **Elementary School Activities (3).** Lec. 2, Lab. 2. Physical education activities suitable for the first six grades including teaching devices.
214. **Kinesiology (5).** Lec. 5. Pr., VM 220-221, PS 204.
221. **Aquatics: Theory and Techniques (2).** Lec. 1, Lab. 4. Water sports, scuba diving, operation and maintenance of pools.
278. **Social and Folk Dance: Theory and Techniques (2).** Lec. 1, Lab. 4. Basic skills, fundamental knowledge and appreciation of social and folk dance.
280. **Basketball Officiating (1).** Lab. 3. Discussions, practices, and leadership experiences.
284. **Softball Officiating (1).** Lab. 3. Discussions, practices, and leadership experiences.
288. **Volleyball Officiating (1).** Lab. 3. Discussions, practices, and leadership experiences.
301. **Recreation Leadership (5).** Lec. 5. Winter, Summer.
302. **Alcohol, Narcotics, and Tobacco (3).** Investigation of stimulants and depressants with special emphasis on alcohol, narcotics, and tobacco. The effects of these substances on the human body and the social, economic, and community problems associated with their use.

* Open to students in Air, Army and Navy ROTC.

303. **Baseball (3). Lec. 2, Lab. 2.**
Offensive and defensive strategy, pitching, catching, infielding, outfielding, batting and baserunning.
304. **Track and Field (3). Lec. 2, Lab. 2.**
Fundamental skills and techniques of track and field athletics. The organizing and conducting of track meets.
311. **Conduct of Dance for High School and Recreation Programs (3). Lec. 2, Lab. 3.**
Pr., completion of PE 278 or equivalent.
Providing experiences in analyzing, selecting and presenting dance for high school and recreation programs.
312. **Theory and Conduct of Team Sports for Women (3). Lec. 2, Lab. 3.**
Lead-up games, skill techniques, rules, and skill tests; practice and application of the skills and principles of team sports.
313. **Theory and Conduct of Individual and Dual Sports (3). Lec. 2, Lab. 3.**
Skills, techniques, rules, and skill tests; practice and application of the skills and principles of individual and dual sports.
314. **Theory and Conduct of Gymnastics (3). Lec. 2, Lab. 3.**
Skills and techniques for teaching apparatus, stunts, and tumbling.
316. **Tests and Measurements (3).**
Analysis, administration, and interpretation of tests and measurements in health, physical education and recreation.
317. **School Health and Health Education (5). Lec. 5.**
Basic scientific health knowledge and its application to the school program. Includes principles, materials, and techniques of health education in elementary and secondary schools.
318. **Principles of Recreation (5). Lec. 5.**
The significance and meaning of leisure; theories of play; the recreation movement in the United States. Principles of program planning and development at state and local levels of government, in schools and in industry.
319. **Outdoor Recreation (5). Lec. 5.**
Outdoor recreation in the United States. Includes principles of planning for recreational use of open land, forests, farms and water.
370. **Dance Survey (3). Lec. 2, Lab. 3.**
Explores styles and types of dance through the ages in relation to music, drama, architecture and art.
372. **Dance Production and Rhythmic Demonstrations (3). Lec. 2, Lab. 3.**
Apprenticeship in producing dance programs, exhibitions of physical activity and festivals.
401. **Organization and Administration (5). Lec. 5. Fall and Spring. Pr., senior standing.**
Administration of intramural and physical education activities; also the construction and care of the physical education plant and departmental organization.
404. **Athletic Injuries, First Aid and Safety (5). Lec. 4, Lab. 2.**
Athletic injuries as to care, prevention, and correction. Developing the knowledge, skills, and techniques of first aid leading to an Instructor's rating in First Aid.
405. **Physiology of Muscular Activity (3). Pr., VM 220-221.**
Inter-relationships of muscular activity and physiological variations.
416. **Adaptive Physical Education (3). Lec. 3. Spring. Pr., PE 214, VM 220 and 221.**
Review of anatomy, physiology, and psychology pertaining to special programs of physical education for the temporarily and permanently handicapped, with laboratory practice in posture training and remedial gymnastics.

Advanced Undergraduate and Graduate

409. **Advanced Health Science (5). Pr., consent of instructor and junior standing.**
Principles and concepts basic to the improvement of individual and group living and the role of the home, school, and community in the development of sound physical and mental health.
419. **Current Problems in Health Education (5). Pr., consent of instructor and junior standing.**
A critical analysis of the problems, issues, and trends in health education.

Graduate

619. **Scientific Principles Applied to Physical Education and Athletics (5). Pr., undergraduate major or minor in health and physical education.**
Specific application of physics, physiology, and psychology to the development of physical skills and related topics including reaction time, motivation, maturation, illusions, morale, and problems of group social living in physical education and athletics.

626. **Physical Fitness, a Critical Analysis (5).** Pr., VM 220-221 or departmental approval.
 Critical analysis of physical fitness objective of physical education through inquiry into current research in medicine, physiology of muscular activity, and physical fitness appraisal and guidance.
669. **Physiology of Exercise (5).** Pr., undergraduate major or minor in health and physical education.
 Experiences in the physiology of muscular activity and application of these to physical education and athletic situations.
699. **Thesis Research.** (Credit to be arranged.) May be taken more than one quarter.

Professional Courses

Undergraduate

101. **Orientation: Personal and Professional (3).**
 Helps transfers from other curricula and students enrolled in other schools achieve optimum personal, social and intellectual development as college students; assists them in understanding teaching as a profession. (Students sectioned by area of specialization.) (Credit in PE 101 excludes credit in PE 102-3-4.)
- 102-3-4. **Orientation: Personal and Professional (1-1-1).**
 Helps freshmen achieve optimum personal, social, and intellectual development as college students and assists in planning professional careers. (Students sectioned by area of specialization.) (Credit in PE 102-3-4 excludes credit in PE 101.)
414. **Teaching in Health and Physical Education in Elementary and Secondary Schools (3).** Lec. 2, Lab. 2. Pr., 9 hours of Psychology, FED 200 or equivalent; Pr., or coreq., FED 300 or equivalent.
 (For description, see page 250.)
423. **Program in Health and Physical Education in Elementary and Secondary Schools (3).** Lec. 2, Lab. 2. Pr., 9 hours of Psychology, FED 200 or equivalent; Pr., or coreq., FED 300 or equivalent.
 (For description, see page 250.)

Undergraduate students with a major in health, physical education and recreation will pursue a minor selected from some other teaching area in the secondary school program or in one of the areas included in the twelve-grade program. (For appropriate course in Teaching or Program, see SED, IED, and VED.)

425. **Student Teaching in Health and Physical Education in Elementary and Secondary Schools (10 or 15).** Lec. 5, Lab. 20. Pr., 9 hours of Psychology, FED 200 or equivalent; FED 300 or equivalent, two courses in Teaching and Program, and junior or senior standing.
 (For description, see page 250.)
429. **Problems of Health Education and Health Observation of School Children (5).** Pr., junior standing.
 Helps the teacher with the details of health observation, aids in health guidance of individual pupils, acquaints the teacher with the health services available through local and state departments.

Graduate

The following courses are organized and taught on a twelve-grade basis:

646. **Studies in Education (1-3).** Pr., one quarter of Graduate study.
 A problem using research techniques to be selected in consultation with the supervising professor. A problem should be selected which will contribute to the program of the student. (Credit in ED 651 prior to 1960 excludes credit in this course.)

Each of these courses, HPR 651 and 652, applies to the following areas of the elementary and secondary school programs: (A) Health Education, and (B) Physical Education. Credit may not be earned in both A and B of the same course.

651. **Research Studies (5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
 Review, analysis and interpretation of available research in health education or physical education with emphasis on designing new research to meet changing needs of the school.
652. **Curriculum and Teaching in Elementary and Secondary Schools (5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
 Teaching practices and reappraisal of selecting experiences and content for curriculum improvement in health education or physical education.

Teaching practices and reappraisal of selecting experiences and content for curriculum improvement in health education or physical education.

- 653. Organization of Program in Health and Physical Education in Elementary and Secondary Schools (2-5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.

Advanced course. Program, organization, and development of basic and supplementary materials for guiding teachers, faculties, and school systems in the continuous improvement of curriculum and teaching practices.

- 654. Evaluation of Program in Health and Physical Education in Elementary and Secondary Schools (2-5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.

Evaluation and investigation of teaching effectiveness with attention also given to the utilization of human and material resources and the coordination of health and physical education with the total school program and with other educational programs of the community.

History (HY)

Head Professor McMillan

Alumni Professor Rea

Professors Iiams, Ivey, and Partin

Associate Research Professor Harrison

*Associate Professors Belser, Newton, Owsley^{**}, Reagan, and Williamson*

Assistant Professors Bond, Eaves, Henson, Jones, and Metzger

Instructors Hall, Murphy, Olliff, Storey, Atkins^{}, Faile^{*},*

M. Newton^{}, Latimer^{*}, and O'Neal^{*}*

- 105-205-305-405. Current Events (1).**

The events of the world today based on current periodicals.

- 106. History of the United States (5).**

The history of the U.S. to 1865.

- 107. United States History (5).**

The United States since the Civil War.

- 204. History of the Modern World (3).** General elective. (Credit in History 208 excludes credit for this course.)

Major periods of modern history and the factors contributing to the modern world civilization.

- 207. World History (5).** Pr., sophomore standing.

The leading events in World History from ancient times to 1648.

- 208. World History (5).** Pr., sophomore standing.

The leading events in World History from 1648 to the present.

- 300. Introduction to Latin American History (5).** Pr., sophomore standing, 10 hours of history (207 and 208 suggested).

A survey of Latin American civilizations to the present with emphasis on the Colonial Period.

- 301. Introduction to Far Eastern History (5).** Pr., sophomore standing, 10 hours of World History.

A brief survey of the major cultural and institutional developments of the area.

- 311. Medieval History (5).** Pr., sophomore standing.

Europe from the fall of the Roman Empire to the Age of Discovery.

- 315. American Negro History (5).** Sophomore standing.

Racial and cultural origins of the Negro, including African background, the slave trade, the development of the labor system, emancipation, and the recent transition of the Negro from a predominately agrarian economy to that of an industrial urban complex.

- 320. History of Russia (5).** Pr., sophomore standing.

The Russian people from early times to the present. Particular emphasis is laid on present domestic institutions and foreign policy.

- 322. The United States in World Affairs (3).** General elective. Pr., sophomore standing.

The influence which the United States has exerted in international affairs. (Excludes credit for HY 421.)

- 350. History of Political Parties (5).** Pr., sophomore standing.

Emphasis is placed on the origin and growth of American political parties from the Federalist era to the present.

* Temporary.

** Leave of absence.

371. **History of the West** (5). Pr., sophomore standing.
The development of the West and of its influence on American history.
381. **History of Alabama** (5). Pr., sophomore standing.
A brief history of Alabama from the beginning to the present.
400. **American Colonial History** (5). Pr., junior standing, HY 101 or 107.
The political, economic and social history of the colonies from their founding to the end of the French and Indian War, 1763.
401. **The American Revolution and the Confederation, 1763-1789** (5). Pr., junior standing and HY 101 or 107.
The new British Colonial policy, the War for Independence and the first federal constitution and the movement to replace it.
402. **Federalist and Jeffersonian America, 1789-1815** (5). Pr., junior standing and 101 or 107.
The establishment of the new federal government, the origins of American political parties, and the role of the United States in the French Revolutionary and Napoleonic Wars.
403. **The American System and Jacksonian Democracy, 1815-1850** (5). Pr., junior standing and HY 101 or 107.
Nationalism, sectionalism, egalitarianism and expansion.
404. **The Civil War** (5). Pr., junior standing and HY 101 or 107.
The sectional controversy from the Compromise of 1850 to the beginning of hostilities in 1861, and of the military, economic, social, and political aspects of the war.
405. **The Reconstruction Period** (5). Pr., junior standing and HY 101 or 107.
An analysis of the social, economic and political aspects of the years 1865-1877.
406. **Recent United States History, 1877-1914** (5). Pr., junior standing and HY 102 or 107.
The political, economic, diplomatic, social and cultural development of the United States.
407. **Recent United States History, 1914-1932** (5). Pr., junior standing and HY 102 or 107.
Political, economic, and social development of the United States.
408. **Modern America, 1932 to the Present** (5). Pr., junior standing and HY 102 or 107.
Political, economic, and social development of the United States.
409. **United States Diplomacy to 1890** (5). Pr., junior standing and HY 101, 102, or 107.
Chief events in our relationships with foreign powers from the Revolutionary War to 1890.
410. **United States Diplomacy Since 1890** (5). Pr., junior standing and HY 102 or 107.
The emergence of the United States from a hemispheric power to a total involvement in world affairs.
411. **Social and Intellectual History of the United States to 1876** (5). Pr., junior standing and HY 101 or 107.
Selected areas of American thought are studied in their social context, ranging from Puritanism to the impact of Darwinism on the American mind.
412. **Social and Intellectual History of the United States Since 1876** (5). Pr., junior standing and HY 102 or 107.
An examination of major intellectual movements in American society from social Darwinism to Progressivism and its legacy.
413. **The South in 1865** (5). Pr., junior standing and HY 101 or 107.
The origins and growth of distinctive social, economic, cultural and ideological patterns in the South with emphasis on period 1815-1860.
414. **The South Since 1865** (5). Pr., junior standing and HY 102 or 107.
Major trends in the South since the Civil War with emphasis on social, economic, cultural and ideological development.
426. **The Reformation Era, 1500-1600** (5). Pr., junior standing and HY 207.
Europe during the Protestant and Catholic Reformations, overseas discovery, and political developments in the age of Charles V, Henry VIII, Elizabeth and Philip II.
427. **The Seventeenth Century** (5). Pr., junior standing and HY 207.
Emphasis on the Thirty Years' War, Scientific Revolution, overseas colonization and European political developments in the age of Louis XIV.
428. **The Age of Reason, 1715-1789** (5). Pr., junior standing and HY 208.
A history of Europe from the Age of Absolutism to the collapse of the Old Regime.
429. **The French Revolution, 1789-99** (5). Pr., HY 208 and junior standing.
Background, causes and course of the Revolution in France.

430. History of Europe from Bismarck through the First World War (5). Pr., HY 208 and junior standing.
Emphasis upon Central Europe, Germany and Italy since unification.
431. History of Europe Since the Treaty of Versailles (5). Pr., HY 208 and junior standing.
Emphasis on the rise to totalitarianism, the Second World War, and the post-war period.
(Offered alternate years with HY 430.)
435. Napoleonic Europe, 1799-1815 (5). Pr., HY 208 and junior standing.
The rise and fall of the Consulate and the Empire in France and French hegemony in Europe.
436. Modern France (5). Pr., HY 208 and junior standing.
From the Ancien Régime to the present.
437. European Diplomatic History, 1815-1919 (5). Pr., Hy 208 and junior standing.
International relations of the Great Powers from Vienna to Versailles.
450. History of China (5). Pr., junior standing and HY 301.
A more intensive study of China emphasizing its dominant role in the Far East.
451. Japan and Southeast Asia (5). Pr., junior standing and HY 301.
A more intensive study of the cultures of Eastern Asia emphasizing the impact of the West in the recent period.
452. The Caribbean Area (5). Pr., junior standing and HY 300.
An analysis of the Caribbean as to its geographic, cultural, and strategic importance from 1492 to the present.
453. Modern South America (5). Pr., junior standing and HY 300.
Colonial background and the cultural development of 19th and 20th century South America.
454. History of Mexico (5). Pr., junior standing and HY 300.
An analysis of the unique cultural development of Mexico.
455. Modern Brazil (5). Pr., HY 300 and junior standing.
Portuguese America from Independence to the present.
460. Great Leaders of History (5). Pr., junior standing.
Some world leaders and their relationship to the great movements of history.
471. History of Medieval England (5). Pr., junior standing and HY 207.
A survey of English origins and institutions to the 17th century.
472. History of Modern England (5). Pr., junior standing and HY 208.
A survey of British history since the 17th century.

GRADUATE COURSES

600. Seminar in American History, 1763-1800 (5).
601. Seminar in American History, 1800-1850 (5).
602. Seminar in American History, 1850-1876 (5).
603. Seminar in American History, 1876-1914 (5).
604. Seminar in American History, 1914- (5).
605. United States Far Eastern Diplomacy (5).
606. United States Latin American Diplomacy (5).
607. United States Atlantic Diplomacy (5).
608. Seminar in American Social and Intellectual History (5).
609. Seminar in the Old South (5).
610. Seminar in the New South (5).
611. Seminar in State and Local History (5).
629. Historical Methods (5).
634. History of Revolutions (5).
635. Seminar in European History (5).
636. Colonial Latin America (5).
637. Latin America in the National Period, Revolutionary Movements and National Developments (5).
638. Seminar in the French Revolutionary and Napoleonic Era (5).
639. Historiography and Theory of History (5).
640. Seminar in Tudor and Stuart England (5).
641. Seminar in 18th Century England (5).
650. Cultural and Institutional Foundations of World History (5).
699. Research and Thesis (5).

READING COURSES

The following reading courses are offered in order to give the graduate student an opportunity for study in specialized areas and are rigorously supervised by the professors responsible for the fields. Registration is by permission of the department and the major professor.

620. Directed Reading in American History to 1876 (5).
621. Directed Reading in American History Since 1876 (5).
622. Directed Reading in American Diplomacy (5).
623. Directed Reading in American Social and Intellectual History (5).
624. Directed Reading in Latin American History (5).
625. Directed Reading in Far Eastern History (5).
626. Directed Reading in English History (5).
627. Directed Reading in European History (5).

Home Economics (HE)

Dean Norma H. Compton

*Professors Davis, Hodson, Rose, Van de Mark, and Van Zante
Associate Professors Barton, Chastain, Douty, Layfield, Morton, Spencer, and White
Assistant Professors Cannon, Current-Garcia, Hamid, Hilton, Hinton,
Lorendo, Rush, and Sumpter
Instructors Bourne, Elam, Hoffman, Schafer*

Professional Courses**110-111-12. Freshman Orientation (I-I-I). Fall, Winter, Spring.**

This course will include personal and health problems; philosophy of Home Economics; professional opportunities in Home Economics.

104. Related Art (5). Lec. 2, Lab. 6. Each quarter.

Related elementary art and design. Emphasis is placed on the application of art study to the home.

301. Audio-Visual Education in Home Economics (3). Lec. 3, Pr., junior standing in Home Economics.

Use and development of illustrative and demonstration materials in the fields of interest to home economists.

304. Home and Family Life (3). Each quarter.

Male and female roles in mate choice, marriage, adjustment, parenthood and marriage problems. Open to men and women.

306. Personal Appearance and Social Interaction (3). General elective. All quarters.

Good grooming, its contributing factors and their influence on social and business relations.

401. Extension Organization and Methods (5). Spring, Summer.

History, organization, and program planning of extension and educational methods of communication.

421. An Evaluation of the Major Field (5). Pr., junior standing.

An evaluation of the possibilities of the major field and the working techniques involved in some of the positions available.

431. Senior Seminar (3). Fall, Spring. Pr., junior standing and a major in Home Economics.

Required for all Home Economics majors. Survey and discussion of recent studies on opportunities and responsibilities for careers in Home Economics; analysis of characteristics, abilities, and skills necessary for success.

Graduate Courses For All Majors**421. An Evaluation in the Major Field (5).**

(See description carried in undergraduate listing.)

601. Special Seminars in Home Economics (5).

A. Child Development and/or Family Life; B. Clothing and/or Textiles; C. Family Economics, Home Management, Equipment and/or Housing; D. Foods and/or Nutrition.

602. Seminar (1). Winter and Summer.

One quarter required for all graduate students in all departments of Home Economics. May be repeated for a maximum of 3 hours credit.

603-4. Administration in Home Economics (5-5).

Administrative policies and procedures dealing with staff, personnel, curricula, student guidance, current trends, new legislation in education, budget implications, and program evaluation. This study is developed through lectures, group discussions, visitations to educational projects, and by visiting administrators.

605. Methods of Research in Home Economics (3).

Research and investigation methods applicable to the various areas of Home Economics. Required of all graduate students in Home Economics.

609. Research Studies in Home Economics. Credit to be arranged (2-5). Pr., consent of instructor. May be taken more than one quarter. Not to exceed 5 hours credit toward minimum of 45 for M.S. or 48 for M.H.E. degree.**651. Audio-Visual Aids in Home Economics (5).**

This course is designed to aid home economists in analyzing, evaluating, organizing, and accumulating illustrative materials.

699. Research and Thesis. Credit to be arranged.

Required of all students under the Thesis Option in any field.

Clothing and Textiles**105. Fundamentals of Clothing (5). Lec. 2, Lab. 8.**

Basic theories and principles of garment selection and structure, including their application in construction of apparel for personal use.

205. Clothing for the Family (5). Lec. 3, Lab. 6. Each quarter. Pr., HE 105 or equivalent.

Problems in wardrobe management to meet the needs of all family members with reference to budgetary factors, individual differences, developmental influence on needs, and consumer selection in the market. Application of fundamental principles in making of garments for family members involving advanced and challenging problems.

225. Textiles (5). Lec. 4, Lab. 2. Pr., CH 103.

Fibers, yarns, fabrics and finishes in their relationship to apparel and household fabrics.

305. Tailoring (3). Lab. 9. Winter, Summer. Pr., HE 205, junior standing.

Selection of fabric and tailoring of a suit or coat.

315. Textiles (5). Lec. 3, Lab. 4. Fall. Pr., CH 103, 104.

The principal aim of the course is the development of sound judgment in the selection of textiles for personal and household use.

325. Fundamentals of Retailing (5). Winter. Pr., EC 200, junior standing.

The practices and policies of retail stores.

335. Retail Training (8). Fall. Pr., HE 325.

Three months practical experience with pay in large department store. Students are given formal instruction and supervision. Scheduled only by pre-arrangement.

345. Creative Crafts (1-2-3). Lab. 9. General elective. Each quarter.

Design and execution of creative crafts; viz., metal work, leatherwork, ceramics, weaving, fabric decoration.

355. Consumer Textiles (3). Lec. 3. General elective. Fall, Winter, Spring.

Textile fabrics, finishes, and trade practices with special emphasis on consumer problems.

365. Creative Metalwork and Mosaics (1-3). Lab. 9. General elective. Fall quarter.

Design and experience in executing work in the areas of creative metalwork, jewelry, enameling, and/or mosaics.

375. Creative Ceramics (1-3). Lab. 9. General elective. Winter quarter.

Working with various clays, building processes, ceramic glazes, and ceramic design.

385. Creative Weaving, and Fabric Decoration (1-3). Lab. 9. General elective. Spring quarter.

Creative experiences in the design of and various ways to decorate fabrics, such as creative stitchery, block print, stencil, batik, dyeing; or a study of weaving design and experiences in selecting yarns, setting up a loom, and weaving one's own fabric.

395. Clothing Design (5). Lec. 2, Lab. 6. Fall, Spring. Pr., HE 104, 105.

Color, line, form and texture as a basis for designing apparel.

405. Creative Costume Design (5). Lec. 2, Lab. 9. Spring. Pr., junior standing, HE 395, and two quarters of clothing construction.

Creative experience in development and execution of apparel designs through draping varied fabrics on individualized body structures. Exploration and application of theories and philosophies and practices of contemporary designers.

415. History of Textiles (5). Lec. 5. Pr., elementary art and junior standing.

The development of the textile industry and of fabric design from the earliest times to the present day.

425. History of Costume (5). Lec. 5. Pr., elementary art and junior standing.

Outstanding historic modes in dress for men and women from early times to the present day.

435. **Textile Testing (5).** Lec. 2, Lab. 6. Winter. Pr., HE 315 or equivalent. Standard testing procedures and equipment used in determining the physical and chemical characteristics of fibers, yarns, and fabrics, and of the statistical methods employed in data evaluation.
445. **Fashion Merchandising (5).** Lec. 5. Pr., HE 325, or consent of instructor. Principles and practices of merchandising in relation to problems of retailing fashion goods. Consideration of the consumer as a major factor in planning merchandise assortments and presentation.
483. **Laundry Equipment and Care of Textile Articles (5).** Lec. 2, Lab. 6 hours. Pr., junior standing, CH 104, PS 204, HE 225 or equivalent. The physical principles involved in the laundering processes will be applied to include selection, care, and proper use of laundering equipment. The reaction of the textile articles to laundry equipment will be studied. The course is team taught by a professor in household equipment and a professor in clothing and textiles.

GRADUATE COURSES

650. **Flat Pattern Designing (5).** Pr., 15 quarter hours undergraduate clothing. Commercial methods of pattern making. Developing a foundation pattern from which to design and cut garments. Attention is given to variations from the norm of human body measurements and to the need for further research in designing for various age groups.
652. **Clothing and Textiles Literature (5).** Written material in the field of Clothing and Textiles with special emphasis on current periodicals, pamphlets, and reports of recent research. Required of all candidates for the master's degree in Clothing and Textiles.
653. **Economics of Clothing Consumption (5).** Pr., EC 200, HE 205. A critical examination of the literature on Clothing and Textiles economics, modern trends in manufacture and distribution and labor laws and their influence on clothing.
655. **Problems in Home Decoration (5).** The undergraduate course, HE 313, is used as a basis for advanced work along the same lines. Problems in valuing choice of materials and arrangements of exteriors as well as interiors of the home are made the topic of minor research.
656. **Speed Techniques in Clothing Construction (5).** Lec. 2, Lab. 6. Pr., 10 quarter hours undergraduate clothing. Recent trends toward rapid fabrication of apparel and of the problems and possibilities of bringing commercial methods into the home or classroom. Applied research in comparative methods of clothing construction.
657. **Detergency and Cotton Textiles (5).** Pr., HE 315 or equivalent. The chemical relation of detergents, water, bleach, and mechanical action to cotton fibers (cellulose).
658. **Chemical and Physical Analysis of Textiles (5).** Pr., HE 315 or equivalent. The theory of A.S.T.M., A.A.T.C.C., and other standardized procedures.
659. **Modern Fibers and Fabrics (5).** Pr., HE 315 or equivalent. Textiles as they actually are and an evaluation of the individual properties and characteristics peculiar to all fibers.
667. **Clothing: Its Social and Psychological Aspects (5).** Pr., basic courses in Sociology, Psychology, and consent of the instructor. Clothing as a factor in the physical, social and psychological environment of man, his response to and use of clothing as an aspect of individual behavior and culture.

Family Life and Early Childhood Education

207. **Principles of Child Development (3).** Lec. 2, Lab. 2. Each quarter. Principles of growth and development, with emphasis on infant development. Students observe in the Child Study Laboratories and other situations involving young children.
257. **The Family and Human Development (5).** Family influences on human development and interactions among family members.
307. **Growth and Development of Children (5).** Lec. 3, Lab. 6. Pr., PG 211, SY 201. The mental, physical, social and emotional growth and development of children with emphasis on the early years. Students observe and participate in the care of children in the child study laboratories.
317. **Adolescent and the Family (5).** Pr., HE 207, 307 or consent of instructor. Growth and development of the adolescent in relation to formative influences, problem areas, and implications.
417. **Guidance of Children (5).** Lec. 3, Lab. 6. Pr., HE 307, and junior standing. Environmental factors affecting the development of children in the home and community. Emphasis is given to principles and methods of guidance. Students participate in the guidance of the children in both the nursery school and kindergarten.

437. **Teaching Methods in Preprimary Education (5).** Lec. 3, Lab. 6. Pr., junior standing.
Organization and management of a nursery school and kindergarten, including selection of equipment. Special units of work will be given in reading and story telling, nature, music, art, and construction of play materials for children.
447. **Directed Teaching in Preprimary Education (5).** Lec. 2, Lab. 9. Pr., junior standing and HE 437.
An advanced course in Nursery School and Kindergarten Education. The student will assume increasing laboratory responsibilities for the guidance of children under supervision of the staff.
457. **Family Relationships (5).** Fall, Spring.
Interpersonal relationships among family members, with attention to human development, training and guidance of children.
467. **Parent Education (5).** Lec. 3, Lab. 4. Pr., junior standing and HE 307.
Principles of working with parents on both an individual and on a group basis.

GRADUATE COURSES

670. **Personality Development (5).**
The development of personality of the child with particular emphasis on the effects of family interaction in the early years.
675. **Pre-School Guidance (5).** Lec. 3, Lab. 4-6. Pr., HE 307.
An application of methods and techniques of guidance in laboratory groups of pre-school children.
676. **The Family and Its Relationships (5).**
Intensive study of the family and its effect upon personality development.
677. **Readings in Family Life and Child Development (5).**
Current literature and research concerning the pre-school child; the school-age child; the adolescent; the young adult; problems of later maturity; changing family patterns.
678. **Advanced Child Development (5).** Pr., HE 307.
Growth and development of children with emphasis upon environmental and developmental factors affecting growth and development and implications for guidance. Laboratory experiences where needed.
679. **Group Approaches to Family Problem Solving (5).** Pr., HE 670 and HE 676, or approval of professor.
The dynamics of the family as a primary group together, with a study of some common family problems. Principles of group interaction in the discussion of family problems.

Foods and Nutrition

102. **Food and Nutrition (5).** Lec. 3, Lab. 4. Each quarter.
Elements of nutrition and principles underlying the fundamental processes and standards of food preparation.
202. **Meal Management (5).** Lec. 3, Lab. 6. Each quarter. Pr., HE 102.
Planning of meals with emphasis on scientific principles of nutrition, aesthetic value, management of time and the food budget on various economic levels.
302. **Cultural Aspects of Food Service (3).** General Elective. Each quarter.
Historical and artistic influences on the selection of modern table accessories used in home and institutional food services.
312. **Nutritional Biochemistry (5).** Lec. 4, Lab. 3. Pr., CH 203.
Chemistry of carbohydrates, fats, proteins, vitamins, and minerals applied to human nutrition.
322. **Food Preservation (3).** Lec. 1, Lab. 6. Fall, Summer. Pr., VM 311 (Bact.).
Preservation of foods by fermentation, crystallization, canning and freezing with special emphasis placed in better quality of foods preserved at home.
332. **Nutrition and Dietetics I (5).** Lec. 3, Lab. 4. Fall. Pr., HE 312, VM 210.
Application of the various factors in influencing the body's need for food. For majors in Nutrition or Nursing Science.
342. **Nutrition and Dietetics II (5).** Lec. 3, Lab. 4. Winter. Pr., HE 332.
A continuation of HE 332.
352. **Institution Organization and Personnel Management (5).** Lec. 4, Lab. 3. Winter.
Quality food service operation as related to management principles, methods of control, and personnel management.
362. **Problems in Community Nutrition (3).** Pr., HE 372, or equivalent.
Methods of presenting nutrition information to organizations engaged in community work. Field experience.

372. Nutrition and Health (3). Lec. 3. General elective. Each quarter. Fundamentals of human nutrition. Food requirements of different age levels and selection of food at different cost levels are considered. Open to all students except Nutrition or Nursing Science majors. (Credit in this course excludes credit in HE 392).
382. Demonstrations in Foods and Nutrition (3). Lec. 2, Lab. 2. Pr., HE 202. Demonstrations and procedures pertaining to foods and nutrition subject matter for use on television or in person before community groups, classroom groups or food industry personnel.
392. Family Nutrition (5). Lec. 5. Principles of nutrition as related to the well-being and needs of family members at all age levels. (Credit in this course excludes credit in HE 372).
402. Diet Therapy (5). Lec. 4, Lab. 2. Spring. Pr., junior standing, HE 332, and HE 342. Application of principles of nutrition to various periods of stress and as a therapeutic aid in treatment of disease.
412. Quantity Food Production (5). Lec. 3, Lab. 4. Fall. Pr., junior standing and HE 202. Institutional menu planning, preparation and serving of foods. Use, operation and maintenance of equipment. University kitchens are used for laboratory experience.
422. Institution Food Purchasing (5). Lec. 4, Lab. 2. Junior standing. Wholesale food marketing and the purchase of food for institutions with emphasis on factors determining quality and cost.
432. Food Service Planning, Layout and Equipment (5). Lec. 3, Lab. 4. Spring. Pr., junior standing and HE 352. Floor plans and layouts with emphasis on materials, specifications, and maintenance of equipment and furnishings for institutional food units.
442. Catering (3). Lec. 1, Lab. 6. Winter. Pr., HE 202. Types of catered food-service functions; planning, pricing, organization, management, equipment and service.
462. Experimental Foods (5). Lec. 3, Lab. 4. Pr., junior standing, HE 202, and CH 203. Causes and effects of various methods of food preparation. It includes basic chemical reactions involved in food combinations. The course gives a foundation for work in food research.
472. Community Nutrition (5). Pr., junior standing and HE 372 or HE 332 or HE 342. Problems involved in improvement of nutrition practices in the community, as it applies to high school teaching and Extension Service programs.
479. Modern Views of Nutrition (3). Pr., junior standing and satisfactory course in nutrition. Current concepts in nutrition and related fields. May not be used for credit by nutrition majors.
482. Institution Food Service Cost Control (5). Lec. 4, Lab. 2. Pr., junior standing. Food control and storeroom management in hospitals, commercial units, and school food services.
489. International Nutrition (3). Pr., junior standing and satisfactory course in nutrition. Nutritional status of world population and local, national, and international programs for improvement. May not be used for credit by nutrition majors.
492. Infant and Child Nutrition (5). Pr., junior standing and HE 372 or HE 332 and HE 342. Nutrition requirements for growth from pre-natal life through adolescence.

GRADUATE COURSES

620. Experimental Foods (5). Pr., or coreq., CH 304. Food preparation from the experimental standpoint, giving instruction in techniques for subjective and objective measurement of food quality.
621. Chemical and Physical Properties of Foods (5). Lec. 4, Lab. 3. Pr., HE 202 and HE 462. Chemical and physical changes of importance in food preparation and processing.
622. Problems in Food Preservation (5). Pr., VM 311 and HE 332. Various problems which grow out of advanced study of preservation of foods. These problems are subjects for minor research.
623. Readings in Food or Nutrition (5). Pr., HE 372 or HE 332, CH 203. A critical survey of current literature in nutrition and food consumption.

624. Advanced Nutrition I (5). Pr., HE 332, HE 342, CH 203, HE 312, or equivalents.
Carbohydrates, fats and proteins.
625. Advanced Nutrition II (5). Pr., HE 332, HE 342, CH 203, HE 312 or equivalents.
Vitamins, minerals and nutritional relationships.
626. Advanced Nutrition III (5). Pr., HE 624 and 625, or equivalent.
Assessment and application of nutritional status. Methods of appraisal of nutritional status, dietary, biochemical and clinical.
628. Research Methods in Nutrition (5).
Special problems in human nutrition.
629. Community Nutrition and Consumer Economics (3). Pr., graduate standing.
A three-week course to be offered in summer quarters.

Home Management, Housing and Equipment

233. Home Equipment (5). Lec. 3, Lab. 4. Fall, Winter, Spring.
Home equipment, with emphasis on selection, use and care.
303. The House (5). Lec. 2, Lab. 6. Fall, Winter, Spring.
Planned to give the student an appreciation of basic plans, both period and modern, from the standpoint of utility, beauty and economy.
313. Home Furnishing (5). Fall, Spring, Summer. Pr., HE 104.
Home furnishings both from an aesthetic and practical standpoint. This includes the recognition of period furniture and its adaptability to the home of today.
323. Home Management (5). All quarters. Pr., HE 202.
The factors affecting the management of the home for the purpose of meeting individual needs and creating satisfying family environment, emphasis on problems involving the use of time, money, and energy.
333. Lighting Equipment (3). Lec. 2, Lab. 2. Winter.
Principles underlying the uses of color and lighting equipment in the home.
343. Interior Home Problems (5). Lec. 3, Lab. 4. Fall, Spring.
Harmonious combinations of present day furnishings, materials, and finishes.
353. Community and Family Health (3). Lec. 2, Lab. 2. General elective.
Health problems related to the community and family including a survey of available health facilities with field trips.
373. Demonstrations in Home Equipment. Lec. 1, Lab. 2 2-hr labs. Pr., HE 202, HE 233, SP 210.
Effective methods in demonstrations. Student proficiency in planning, preparing, and presenting demonstrations for equipment manufacturers, consumer services, utility companies, retailers, communication news media, and others is emphasized.
413. Contemporary Housing and Equipment—Travel Course (5 hours—28 days).
Course may be repeated for additional credit, not to exceed 10 credit hours (not more than 5 hours graduate credit). Pr., 10 cr. hrs. in equipment, housing, or home management; junior standing; consent of instructor.
Housing and household equipment in North European countries. Housing: historic and contemporary housing, techniques for meeting population growth, the housing of special groups, community and city planning. Equipment manufacture, distribution, testing, standardization, merchandising, power merchandising and home use. Lectures will be presented at prearranged points. A paper is required on a selected phase of the course.
423. Equipment and Housing Technology (5). Lec. 2, Lab. 6. Pr., junior standing, MH 107 or equivalent, PS 204 or equivalent, CH 104.
Application of basic physical principles and the use of testing instruments with electricity and fuel gas equipment.
433. Food Equipment (5). Lec. 3, Lab. 4. Winter, Summer. Pr., junior standing, PS 204, HE 233.
Principles underlying the operation and use of food equipment.
443. Home Management Residence (5). Each quarter. Pr., junior standing, HE 202 and HE 323.
Residence in the home management house gives actual experience in different phases of homemaking with emphasis placed on the management process, satisfactory group relations, and development of individual initiative.
453. The Consumer and the Market (5). Lec. 5. Fall, Spring. Pr., junior standing and EC 200 or 201.
463. Family Economics (5). Lec. 5. Winter, Summer. Pr., junior standing, HE 453 or equivalent.

473. Contemporary Home Furnishings (3). Lec. 1, Lab. 4. Pr., HE 313 or 343 or its equivalent.
 Factors contributing to developments in the current home furnishings industry in design, manufacturing cost, and terminology. A project report is required.
483. Laundry Equipment and Care of Textile Articles (5). Lec. 2, Lab. 6. Pr., junior standing, CH 104, PS 204, HE 225 or equivalent.
 The physical principles involved in the laundering processes will be applied to include selection, care, and proper use of laundering equipment. The reaction of the textile articles to laundry equipment will be studied. The course is team taught by a professor in household equipment and a professor in clothing and textiles.
493. The House Utility Core (3). Lec. 2, Lab. 3. Pr., junior standing, 5 hours in equipment.
 A course that presents home wiring, heating and cooling, the use of water in the home, the physical arrangement, and space allocated to their use. To include kitchen, laundry, and bathroom planning.

GRADUATE COURSES

630. Trends and Supervision in Home Management (5). Pr., HE 323 and HE 443 or permission of instructor.
 Developments, trends and supervision in home management.
631. Readings in Home Management (5). Pr., HE 323.
 An analysis and evaluation of literature and research studies in Home Management.
632. Research Techniques in Equipment and Housing (5). Lec. 3, Lab. 6. Pr., HE 493.
 A lecture and laboratory course in which problem solving techniques and methods are developed.
633. Family Housing (5). Lec. 5. Pr., EC 200, HE 303, HE 323.
 The history and development of American housing; economical, legal and social aspects; present trends.
634. Economic Problems of Families (5). Pr., HE 323, HE 453.
 Income distribution, cost of living, the business cycle, taxation, and economic provisions for unemployment, health, accidents, old age, and dependents.
635. Advanced Home Management and Equipment (3). Pr., graduate standing.
 A three-week course offered in summer quarters only.
636. Analysis of Home Management Problems (5). Lec. 3, Lab. 4. Pr., HE 323 or equivalent, or consent of instructor.
 Work analysis and adaptation of technological improvements in using management principles of human and non human resources (time, energy, and income).
638. Advanced Housing (3). Lecture lab. 8-12 for 12 days.
 A two-week course offered in the summer quarter. A leader of some renown in the field of housing will be secured to lecture and direct laboratory work in space, form, livability, and other physical aspects of housing. Approved for graduate credit for Master of Science programs.

Horticulture (HF)

*Professors Perkins, Jones, and Orr
 Associate Professors Amling, Fisher, Harris, and Norton
 Assistant Professors Moore and Sanderson
 Instructors Martin and Turner*

Ornamental Horticulture

101. Introduction to Ornamental Horticulture (1). Lec. 1.
 An orientation course for freshman students introducing all fields in Ornamental Horticulture.
221. Landscape Gardening (5). Lec. 3, Lec.-Dem. 4.
 Principles of landscape gardening applied to the development of small home grounds and school grounds. The lecture-demonstration periods are devoted to the study of the identification and use of ornamental plants, landscape drawings, and the propagation and maintenance of ornamental plants.
222. Trees (5). Lec. 3, Lab. 4.
 Identification, culture and use of ornamental trees in landscape plantings.
223. Evergreen Shrubs and Vines (5). Lec. 3, Lab. 4.
 Identification, culture, and use of broadleaf and narrowleaf evergreens in landscape plantings.
224. Plant Propagation (5). Lec. 3, Lab. 4.
 Basic principles and practices involved in the propagation of horticultural plants.
225. Flower Arranging (3). Lec. 2, Lab. 2. General elective.
 Principles and practices of flower arranging for the home.

321. **Deciduous Shrubs and Vines (5).** Lec. 3, Lab. 4.
Identification, culture and use of deciduous shrubs and small trees in landscape plantings.
323. **Greenhouse Construction and Management (5).** Lec. 3, Lab. 4.
Principles and practices of construction and utilizing greenhouses for various purposes such as plant propagation, crop production, and research.
325. **Landscape Planning of Home Grounds (5).** Lab. 15. Pr., HF 221.
Planning of large and small home grounds.
326. **Landscape Planning of Public Grounds (5).** Lab. 15. Pr., HF 221.
Planning of public areas and grounds of public buildings, including general layout, planting and detail treatment of special areas.
421. **Care and Maintenance of Ornamental Plants (5).** Lec. 3, Lab. 4. Pr., BY 306, 309 and junior standing.
Principles and practices of the care and maintenance of trees and shrubs, including pruning, tree surgery, transplanting, and fertilization.
422. **Floricultural Crop Production (5).** Lec. 3, Lab. 4. Pr., HF 323 and junior standing.
Floricultural crop production under management in greenhouse and outdoor conditions.
423. **Nursery Management (5).** Lec. 3, Lab. 4. Pr., HF 224, BY 306, AY 304 and junior standing.
Principles and practices of the management of a commercial ornamental nursery.
424. **Planting Design (5).** Lec. 3, Lab. 4. Pr., HF 222, 223, 321 and junior standing.
Principles and practices of the combination and use of ornamental plants in landscape plantings.
425. **Flower Shop Management (5).** Lec. 3, Lab. 4. Pr., HF 225, 422, permission of instructor.
Principles and practices of flower shop management and floral designing.
- 426-27-28. **Minor Problems (5-5-5).** Lec. 1, Lab. 8. Pr., senior standing and permission of instructor.
Students are assigned minor problems in either Landscape Maintenance, Nursery Management or Floriculture, on which independent library, field or greenhouse investigations are made, under supervision of instructors.
429. **Advanced Plant Propagation (5).** Lec. 3, Lab. 4. Pr., HF 224, BY 306, and junior standing.
Commercial propagation of Horticultural plants with emphasis on the physiological and anatomical principles.
430. **Marketing Horticultural Specialty Products (5).** Lec. 3, Lab. 4. Pr., HF 422, HF 423.
Channels and methods of distribution of floricultural and nursery products.
431. **Advanced Landscape Gardening (5).** Lec. 3, Lab. 4. Pr., BY 101, HF 221, graduate standing.
Principles and practices applying to the use of ornamental plant material in landscaping. (Selected portions of this course may be offered as a 3 hour credit in the Master of Agriculture program.)
432. **Controlled Plant Growth (5).** Lec. 3, Lab. 4. Pr., AY 304, BY 306, CH 207, CH 208, HF 323, and junior standing.
Controlling and directing growth of plants by manipulation of the environment and by the use of chemicals.

General Horticulture

201. **Orchard Management (5).** Lec. 3, Lab. 4. Each quarter.
Propagating, planting, pruning, cultivating, fertilizing, spraying, thinning, harvesting, grading, storing and marketing the most valuable fruits and nuts grown in the South.
308. **Vegetable Crops (5).** Lec. 3, Lab. 4. Each quarter.
Principles and special practices used in the production of vegetable crops.
340. **Industrial Food Preservation Technology (5).** Lec. 3, Lab. 4. Fall. Pr., junior standing or consent of instructor.
Principles of food preservation as applied to industry. Processes considered include refrigeration, pasteurization, canning, freezing, drying, concentration, fermentation, pickling, salting, irradiation, and the use of food additives.
341. **Industrial Food Equipment and Processes I (5).** Lec. 3, Lab. 4. Winter. Pr., junior standing or consent of instructor.
Material and structural requirements of food equipment, and basic principles and processes such as heat exchange, refrigeration, evaporation, distillation, homogenization, extraction, filtration, centrifugation, fluid flow and instrumentation.

342. Industrial Food Equipment and Processes II (5). Lec. 3, Lab. 4. Spring. Pr., junior standing or consent of instructor.
Continuation of subject matter of HF 341 with emphasis on unit operations and processes.
343. Food Analysis and Quality Control (5). Lec. 3, Lab. 4. Fall. Pr., CH 208.
Sensory, chemical, and instrumental food analysis and its application to quality control and evaluation of grades and standards.
401. Commercial Vegetable Crops (3). Lec. 2, Lab. 2. Winter. Pr., HF 308 and junior standing.
An advanced course in the production of the major commercial vegetable crops.
402. Storage, Packaging and Marketing of Vegetable Crops (3). Lec. 2, Lab. 2. Spring. Pr., junior standing.
Physiological, pathological, and horticultural principles in storing, packaging, and marketing of commercial vegetable crops.
404. Fruit Growing (5). Lec. 4, Lab. 2. Winter. Pr., HF 201 and junior standing.
Production and marketing of commercial tree fruits grown in the South.
405. Small Fruits (5). Lec. 4, Lab. 2. Spring. Pr., HF 201 and junior standing.
Principles and practices involved in the production of strawberries, grapes, blueberries, and brambles.
406. Nut Culture (5). Lec. 4, Lab. 2. Fall and Winter. Pr., HF 201 and junior standing.
Production and marketing of pecans, walnuts, chestnuts, tung, and filberts.
408. Commercial Vegetable Crops (3). Lec.-Lab. 4. Spring or Summer. Pr., HF 308 and graduate standing.
Application of research information to the commercial production and handling of the principal vegetable crops. (Credit for both HF 408 and 401 may not be used to meet requirements for the Master's degree.)
410. Recent Advances in Small Fruits (3). Spring and Summer. Pr., HF 201 and graduate standing.
Scientific advances in small fruits and their application to small fruit culture in Alabama. (Credit for both HF 410 and HF 405 may not be used to meet requirements for the Master's degree.)

GRADUATE COURSES

601. Experimental Methods in Horticulture (5). Lec. 3, Lab. 6. Any quarter.
Purposes of research, discovery, and progress as related to the scientific method; research programs, horticultural programs, selecting projects, reviewing literature, preparing project outlines, conducting experiments, recording data, analyzing data, and publication of results.
602. Horticultural Literature (5). Lec. 3, Lab. 6. Any quarter.
Review of horticultural literature and history of horticultural enterprises, including vegetables, fruits, and ornamentals. The laboratory consists of library assignments and reports.
603. Special Problems in Horticulture (3-5). Credit to be arranged. All quarters.
Pr., graduate standing.
Selected problems in vegetable production, pomology, food technology, or ornamental horticulture.
604. Plant Growth and Development (5). Lec. 4, Lab. 2. Any quarter. Pr., HF 432 or BY 306 and consent of instructor.
Morphological and physiological changes in horticulture plants as induced by growth regulators and their theoretical implications in the improvement of horticultural crops production.
605. Nutritional Requirements of Horticultural Plants (5). Lec. 4, Lab. 2.
Nutritional requirements of horticulture crops and factors affecting these requirements.
606. Physiology of Horticultural Products Following Harvest (5). Lec. 3, Lab. 4. Winter, even years. Pr., BY 306 and graduate standing.
Physiological changes occurring in fresh fruits, vegetables, and other horticultural plant products after harvest. Methods of studying these changes and factors influencing them.
607. Breeding of Horticultural Crops (5). Lec. 3, Lab. 4. Summer, even years.
Pr., ZY 300 and graduate standing.
An application of genetic principles in the propagation and maintenance of fruit, vegetable, and ornamental crop varieties. The genetic basis of some production problems, and special breeding methods applicable to horticultural crops.
699. Research and Thesis. Credit to be arranged. May be taken more than one quarter.

Industrial Engineering (IE)*Head Professor Brooks**Professor Cobb**Associate Professors Hartford, Hool, Layfield, Mize, Morgan, Rainer, and White**Assistant Professors Fowler, Herring, and Trucks**Instructor Maghsoodloo**

- 201. Industrial Engineering (5).** Pr., sophomore standing.
Survey of the concepts, techniques, and functions of Industrial Engineering. (Not open to Industrial Engineering students.)
- 204. Computer Programming (3).** Pr., MH 162.
Digital computer programming with emphasis on mathematical and engineering problems, using FORTRAN programming language.
- 301. Electronic Data Processing and Computer Programming (5).** Lec. 4, Lab. 3.
Pr., junior standing.
Functions and uses of electronic data processing equipment, and an introduction to digital computer programming with emphasis on administrative problems, using COBOL programming language.
- 302. Production Control Functions (5).** Lec. 4, Lab. 3. Pr., IE 201.
Planning, scheduling, routing, and dispatching in manufacturing operations. Mechanisms for production control. (Not open to Industrial Engineering students.)
- 303. Engineering Statistics I (4).** Pr., MH 263.
Basic probability, descriptive statistics, distribution functions, confidence intervals, and engineering applications.
- 304. Statistical Laboratory (2).** Lec. 1, Lab. 3. Pr., IE 303.
Data organization, reduction, analysis, and presentation.
- 305. Information-Decision Systems (2).** Lec. 1, Lab. 3. Pr., IE 204 or IE 301.
Interrelated components of complex management information-decision systems. Design considerations for systems involving computers as a principle data processing device.
- 310. Work Measurement (5).** Lec. 4, Lab. 3. Pr., IE 303.
Principles and practices of methods engineering and time study.
- 312. Engineering Statistics II (5).** Pr., IE 303.
Tests of hypothesis, regression techniques, analysis of variance, and engineering applications.
- 316. Electronic Data Processing Systems (5).** Lec. 4, Lab. 3. Pr., IE 301, or IE 204 and IE 305.
Application of computers and associated data processing equipment to business and administrative information and decision systems.
- 320. Engineering Economy (5).** Pr., junior standing.
Practical engineering studies for the economic selection of structures, equipment, processes, and methods.
- 322. Quality Control (5).** Lec. 4, Lab. 3. Pr., IE 303 or MH 367.
Statistical methods of controlling quality in manufacturing.
- 323. Linear Programming (3).** Pr., IE 204, MH 264.
General linear programming problems with graphical, vector, and simplex methods of solution. Transportation and allocation models included.
- 406. Industrial Management Problems (5).** Pr., IE 302, IE 310.
Study of industrial problems which arise in industrial management. (Not open to Industrial Engineering students.)
- 416. Industrial Simulation (4).** Pr., IE 304, IE 305, IE 312.
Simulation of industrial systems and processes.
- 420. Materials Handling (5).** Lec. 4, Lab. 3. Pr., IE 310.
Materials handling equipment, methods, and systems. (Not open to Industrial Engineering students.)
- 422. Inventory Control (5).** Pr., or coreq., IE 423, IE 416.
Application of quantitative methods to the control of industrial inventories.
- 423. Operations Research (5).** Pr., IE 304, IE 305, IE 312, IE 323, MH 361.
Introduction to the methodology of operations research.
- 424. Production Control (5).** Pr., IE 423.
Design of industrial production control systems.
- 426. Industrial Budget Control (5).** Lec. 4, Lab. 3. Pr., IE 320.
Study of industrial control through budgets and the interrelationships between organization, management, and budgets.

* Temporary.

428. Operations and Facilities Design (5). Lec. 2, Lab. 9. Pr., IE 322, IE 310, IE 320, IE 422.
 The design of industrial, institutional, governmental and service operations and facilities. (Should be taken during student's final quarter.)
430. Contracts and Specifications (3). Pr., senior standing.
 Contract documents; specification writing; professional relations.
432. Plant Maintenance (3). Pr., IE 201.
 Principles of organizing and controlling maintenance operations in industrial plants. (Not open to Industrial Engineering students.)
434. Sales Engineering (3). Pr., IE 201, junior standing.
 Application of appropriate principles and techniques to selling industrial products when a background knowledge of production is required. (Not open to Industrial Engineering students.)
436. Plant Location (5). Pr., IE 320, IE 323, IE 423.
 Study of factors and techniques pertinent to the economic location of industrial plants.
438. Safety Engineering (5). Pr., IE 201, junior standing.
 Principles, practices, organizations, and procedures for industrial accident prevention and plant protection. (Not open to Industrial Engineering students.)
- 490-1-2. Industrial Engineering Problems (1-5). Pr., permission of instructor and department head approval.
 Individual student endeavor under staff supervision involving special problems of an advanced nature in Industrial Engineering.

Advanced Undergraduate and Graduate Courses

440. Sampling and Survey Techniques (3). Pr., IE 312, IE 441, and junior standing.
 Theory and application of statistical sampling and survey methods, with emphasis on methods optimization.
441. Applied Industrial Engineering Mathematics (3). Pr., IE 323, MH 264, and junior standing.
 Matrix Algebra required for linear programming, transfer theory needed for the study of systems, numerical methods of solving these problems.
442. Advanced Linear Programming (3). Pr., IE 323, IE 441, and junior standing.
 Continuation of IE 323 with emphasis on theory. Revised simplex, dual simplex, parametric programming, decomposition, and applied problems.
458. Reliability Engineering (3). Pr., IE 312, IE 322, IE 423, and junior standing.
 Reliability, maintenance, and replacement, with emphasis on quantitatively descriptive methods to be used for problem solving.
464. Man-Machine Systems (3). Pr., IE 423, PG 461, or Permission of Instructor and junior standing.
 Human engineering and human beings' relation to machine systems; human characteristics in view of performance of functions where machines are involved, and design for man-machine systems.
470. Project Management (3). Pr., IE 423, or permission of instructor and junior standing.
 Project management and development, with primary emphasis on use of operations research methods and cost analysis. Includes a study of the application of CPM and PERT to project management.
471. Project Flow Analysis (3). Pr., IE 416, IE 423, and junior standing.
 Application of operations research methods to problems in materials handling. General materials handling problems, analysis of fixed schedule systems, random flow systems, waiting lines, conveyors, and the use of simulation methods.
472. Engineering Controls for Management (3). Pr., IE 426 and junior standing.
 Mathematical and graphical methods for indication and control of corporate performance. Industrial cases and examples of corporate planning and control are studied. Emphasis is on top management functions.
480. Automation (5). Pr., junior standing and consent of instructor.
 History, development, and state of automation in business. Business data processing and the resulting implications in management practices and research. (Not for science and mathematics students.)

GRADUATE COURSES

616. Industrial Dynamics (3). Pr., IE 416 or permission of instructor.
 Industrial dynamics based on a systems approach to industrial and related economic problems, with emphasis on decision-making.
617. Advanced Simulation Problems (3). Pr., IE 416 or permission of instructor.
 Journal readings of applications simulation and development of procedure to solve large scale, realistic simulation problems.

- 623. Introduction to Stochastic Processes (3).** Pr., IE 423, IE 441. Markov Chains, life and birth processes, random walk, and queueing theory and applications will be studied.
- 624. Inventory and Production Control Systems (3).** Pr., IE 422, IE 424. Advanced topics in production control and inventory theory. The relationships between production and inventory will be discussed.
- 630. Advanced Statistical Methods for Engineers I (3).** Pr., IE 312, IE 441. Elaboration of basic statistical methods for engineers, with emphasis on a more theoretical study of multiple linear regression and the optimization of multiple linear regression procedures.
- 631. Advanced Statistical Methods for Engineers II (3).** Pr., IE 630. Extension of IE 630, with primary emphasis on analysis of variance methods. Includes a theoretical study of analysis of variance methods, mathematical derivation of mean squares, multiple comparison tests, and the Bennett & Franklin algorithm.
- 632. Advanced Statistical Methods for Engineers III (3).** Pr., IE 631. Philosophy and methods of statistical design optimization, with emphasis on optimum multiple linear regression designs, optimum analysis of variance designs, and an introduction to response surface analysis systems optimizing.
- 633. Dynamic Programming (3).** Pr., IE 441, IE 423. Theory of dynamic programming, a study of some general dynamic programming methods, and a case study of applications.
- 634. Non-Linear Programming (3).** Pr., IE 442. Quadratic Programming, Separable Programming, Gradient Methods, and Integer Programming.
- 664. Management Information Decision Systems (3).** Pr., IE 441 or permission of instructor. Analysis of organizations for information requirements, information flow, data storage and usage and total information systems.
- 665. Advanced Behavioral Engineering (3).** Pr., IE 464 or permission of instructor. Advanced topics in man-machine relationships, stimulus-response studies, and learning theory.
- 670. Advanced Computation Methods (3).** Pr., permission of instructor. Study of advanced computer languages, pattern recognition, and hybrid computation. This course is designed to keep the graduate student abreast of current ideas in this rapidly expanding field.
- 690-1-2. Industrial Engineering Projects (1-3).** Pr., permission of instructor. Special topics which the students desire to investigate under supervision of the graduate staff.
- 699. Thesis. (Credit to be arranged.)**

Industrial Laboratories (IL)

Professor Haynes

Assistant Professors Goolsby, McMurtry, and Wingard

Instructor Connor

Courses listed below are available as electives to all students with the necessary prerequisites.

- 102. Welding Science and Application (1). Lab. 3.** Basic principles and application of welding and cutting processes in the fabrication of metals.
- 103. Machine Tool Laboratory (1). Lab. 3.** Introduction to metal removal processes; basic machines of production.
- 104. Sheet Metal Design and Fabrication (1). Lab. 3.** Methods and equipment used in design, production and fabricating of sheet metal products.
- 105. Foundry Technology (1). Lab. 3.** Basic fundamentals involved in casting products of ferrous and non-ferrous metals.
- 308. Gages and Measurements (5). Lec. 4, Lab. 2. Pr., IL 103.** The science of measurement as applied to production and inspection of industrial products.

Manufacturing Processes

Courses designed to acquaint the student with basic manufacturing processes including analysis of machines, tools, material product design, and dimensional control.

301. Manufacturing Processes—Casting area (3). Lec. 3. Pr., any one shop course. Analysis of materials, methods, and design of cast products.
302. Manufacturing Processes—Machining area (3). Lec. 3. Pr., IL 103. Principles of machining metal products.
303. Manufacturing Processes—Shaping, Forming, and Fabricating area (3). Lec. 3. Pr., IL 102. Materials and methods involved in the production of metal products by shaping, forming, and welding processes.
304. Materials in Design Engineering (3). Lec. 3. Acquaints the student with methods of material selection for product development.
310. Dimensional Control (4). Lec. 3, Lab. 2. Pr., IL 103. Fundamentals of Measurement Science with Laboratory Exercises in Dimensional Control.
405. Problems in Welding Engineering (5). Lec. 3, Lab. 4. Pr., IL 102. Advanced phases and techniques of welding and allied processes. Studies in design, weldability of metals, inspection practice, and selection of equipment.
406. Problems in Machining (5). Lec. 3, Lab. 4. Pr., IL 103. Advanced phases of metal machining with emphasis on production machines and accessories.
450. Engineering Metrology (1-5). Pr., junior standing and departmental approval. Studies in design, construction and use of precision measuring equipment and gages.

Courses designed chiefly for the preparation of teachers in Industrial Arts subjects and related fields.

101. Woodworking (1). Lab. 3. Introduction to machines, tools, and materials used in working with wood and plastic.
307. General Metals (5). Lec. 3, Lab. 4. Pr., consent of instructor. Design, construction and finishing art metal projects.
402. Advanced Woodworking (5). Lec. 3, Lab. 4. Pr., IL 101. Studies in design, construction, and finishing fine objects of wood.
403. General Shops (5). Lec. 5. Pr., senior standing. Problems of organization of unit shops into integrated whole for effective use in high school teaching.
415. Shop Work for Elementary Teachers (5). Lec. 2, Lab. 6. Pr., junior standing. Methods, materials, and techniques involved in conducting activity programs in schools and recreational centers.
416. Materials of Industrial Arts (5). Lec. 5. Pr., senior standing. History and use of various materials used in industry.
417. Organization of Shop Courses (5). Lec. 5. Pr., senior standing. Organization and administration of the Industrial Arts program in the public schools.
418. Industrial Arts Design (5). Pr., senior standing. Fundamentals of design as applied to Industrial Arts projects.
419. Utilization of Machine Tools in Research and Development (1). Lab. 3. Instruction in the use of machine tools for machining, fabricating and finishing components and assemblies of working models for developmental projects.

GRADUATE COURSES

- 611-12. Technical Problems in Industrial Arts (5-5). Pr., graduate standing. Advanced study of technology and method in selected areas of Industrial Arts.

Interdepartmental Education (IED)

Included in this section are program areas and course listings designed and taught on the interdepartmental basis. The subheadings reflect the nature and scope of the offerings.

Curriculum and Teaching – Elementary-Secondary

Teaching, Program, and Student Teaching

Students in either secondary or elementary education pursuing a curriculum leading to certification for teaching in a particular subject-matter field in elementary and secondary schools will take the Teaching and the Program courses in the teaching field in which certification is expected. These courses may be scheduled and taught as separate courses, related courses, or as a unified program.

414. Teaching in Elementary and Secondary Schools (3). Lec. 2, Lab. 2. Pr., 9 hours of Psychology, FED 200 or equivalent; Pr., or coreq., FED 300 or equivalent.
 (A) Art, (C) Dramatic Arts, (J) Music, (M) Speech, (N) Speech Correction.
423. Program in Elementary and Secondary Schools (3). Lec. 2, Lab. 2. Pr., 9 hours of Psychology, FED 200 or equivalent; Pr., or coreq., FED 300 or equivalent.
 (A) Art, (C) Dramatic Arts, (J) Music, (M) Speech, (N) Speech Correction.
425. Student Teaching in Elementary and Secondary Schools. Twelve Grades (10 or 15). Lec. 5, Lab. 20. Pr., 9 hours of Psychology, FED 200 or equivalent; FED 300 or equivalent, two courses in Teaching and Program, and senior standing.
 (A) Art, (C) Dramatic Arts, (I) Mental Retardation, (J) Music, (M) Speech, (N) Speech Correction.

Graduate

Courses 651, 652, 653, or 654, apply to the following areas of the school program: (A) Art, (C) Dramatic Arts, (E) Gifted, (I) Mental Retardation, (J) Music, (M) Speech, and (N) Speech Correction.

648. Advanced Study of Curriculum and Teaching (5). Pr., FED 647 or consent of departmental chairman.
 Major issues, frontier developments, and trends in the improvement of curriculum and teaching in elementary and secondary schools.
651. Research Studies in Education in Areas of Specialization (5). Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education.
 Review, analysis, and interpretation of available research with emphasis on designing new research to meet the changing needs of the school.
652. Curriculum and Teaching in Areas of Specialization (5). Pr., 18 hours of appropriate subject matter and 36 hours of Psychology and professional education. Teaching practices and reappraisal of selecting experiences and content for curriculum improvement.
653. Organization of Program in Areas of Specialization (2-5). Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education. Advanced course. Program, organization, and development of basic and supplementary materials for guiding teachers, faculties, and school systems in the continuous improvement of curriculum and teaching practices.
654. Evaluation of Program in Areas of Specialization (2-5). Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education. Evaluation and investigation of teaching effectiveness with attention also given to the utilization of human and material resources and the coordination of areas of specialization with the total school program and with other educational programs of the community.
658. Seminar and Independent Study in Curriculum and Teaching (5). Pr., FED 647 and IED 648.
 Research and experimentation in elementary and secondary schools in the development of education programs and the improvement of teaching and learning. Appraisal of significant curriculum research, exploration of areas of needed research in curriculum and instruction, and study of fundamental criteria and methods for solving curriculum problems.

Special Education — Elementary-Secondary

Advanced Undergraduate and Graduate

476. The Exceptional Child (5). Pr., junior standing.
 The etiology, incidence, diagnosis and philosophy of teaching the exceptional child. Special attention is given to the child who is physically or mentally handicapped and to the child who is mentally superior.
478. Nature of Mental Retardation (5). Pr., junior standing and IED 476.
 Characteristics and nature of mental retardation. Etiology, identification, and classification of retardation are investigated. Social, psychological, physical, and educational implications of mental retardation are considered.
479. Methods and Materials for Teaching the Mentally Retarded (5). Pr., 9 hours of Psychology, FED 200 or equivalent, IED 476, IED 478. Pr., or coreq., FED 300 or equivalent.

Graduate

643. **Education of the Physically Handicapped (5).** Pr., adequate courses in physiology and psychology. Characteristics of major physical disabilities; the psychology of the physically handicapped; the educational objectives with curriculum adaptations; and related aspects of a total program for the physically handicapped.
650. **Teaching the Mentally Retarded (5).** Pr., IED 476, IED 478 and IED 479. Observation and participation under supervision in educational programs for the mentally retarded. Lectures and discussions will implement the student's work in the classroom. Students will develop and evaluate plans and programs for the special class. (For teachers pursuing a program of education for mentally retarded children.)

School Library Science – Elementary-Secondary**Advanced Undergraduate and Graduate**

472. **Books and Related Materials for Children (4).** Pr., junior standing. Examination and evaluation of printed and other types of materials in view of their relevance to the needs and interests of various age and grade levels of elementary school children. Study of selection aids, principles, and criteria for selecting materials.
482. **Organization and Administration of School Libraries (5).** Pr., junior standing. Basic organization of books, non-book materials, and services for effective use in school libraries. Administering the budget, selection and purchase of materials, preparation of materials for use, circulation of materials, inventory, care and repair of materials, and instruction in the use of library materials are considered.
484. **Classification and Cataloging of School Library Materials (5).** Pr., junior standing. Principles and procedures of classifying and cataloging books and other printed materials, filmstrips, recordings, and community resources. The vertical file, the Dewey decimal system of classification, Wilson and Library of Congress printed cards, and subject headings are studied.
486. **Books and Related Materials for Young People (5).** Pr., junior standing. Study and evaluation of books and other types of materials in relation to the interests, needs, and abilities of young people of high school age. Attention is given to selection aids, principles and criteria of selection, reading guidance, and significant investigations concerning young people's reading.
487. **Practicum in School Library Services (4-6).** Lec. 2, Lab. 4-8. Pr., junior standing. Provides students with information pertaining to methods used in the operation of libraries in elementary and secondary schools.

Graduate

610. **Reference Materials and Service (5).** Pr., 10 hours in library science at the 400 level. Study and evaluation of basic reference sources for effective reference service in school libraries. Elementary research methods of locating information and the role of various types of reference books as resource material in curricular units are considered.
611. **Principles of School Librarianship (5).** Pr., 10 hours in school library science at the 400 level. Place and function of library service in the American educational system. Historical development of libraries; library services to teachers and pupils as an integral part of the school program; standards and administrative policies are included.
612. **Problems in the Administration of the School Library Services (5).** Pr., 10 hours in school library science at the 400 level. Current problems relating to an effective program of school library service.
613. **Library Services in the School and Community (5).** Pr., 10 hours in library science at the 400 level. School library-community relations; historical background, current trends; problems and programs of service; relation to public and rural library extension service; selection of materials on the basis of community and curriculum needs; book lists and exhibits.

Higher Education**Graduate**

The courses described below along with AED 618 and AED 697 are designed especially for advanced students who are interested in positions in colleges, universities, and other post secondary-school institutions.

663. **The American College and University (5).**
Philosophy and function, the university and social change, the community college, academic freedom, student-faculty-community relationships; international flow of educational ideas, government cultural programs, higher education and the state.
665. **The Community College (5).**
The rise and development of the community or junior college in American education. Includes organization, curriculum construction, staffing, and instructional procedures.
798. **Research and Thesis (5).**
799. **Doctoral Research and Dissertation. (Credit to be arranged.)**

Journalism (JM)

*Professor Burnett
Instructor Logue*

English 101-2 or 103-4 is a prerequisite for all courses in journalism.

221. **Beginning Newswriting (5).**
Introduction to newswriting, newspaper style, and mechanical practice, supplemented by work on the college newspaper.
223. **Reporting (5). Pr., JM 221.**
The technical aspects of reporting and newsgathering methods, supplemented by work on the college newspaper.
224. **Copyreading and Editing (5). Pr., JM 221.**
Methods of editing copy, writing headlines, basic make-up and proof reading.
315. **Agricultural Journalism (3).**
Designed for students in agriculture and home economics. Introduces practices of news coverage and writing, with major emphasis on specialized fields of study.
322. **Feature Writing (5). Pr., JM 221 or permission of the instructor.**
Gathering material for and the writing of "human interest" and feature articles for newspapers and magazines, with consideration given to the marketing of manuscripts.
323. **The Weekly Newspaper (5). Pr., JM 221.**
Methods, problems, and policies involved in editing the weekly newspaper, as differing from the metropolitan daily.
421. **Photo-Journalism (5).**
Uses and processes of photography in the newspaper and magazine field. Operation of press cameras and the technique of developing, printing, and enlarging of pictures is provided.
- 422-3. **Journalism Workshop (3-3). All quarters. Pr., 15 hours of journalism, including JM 221 and 223.**
A two-quarter course giving practical experience in preparation of newspaper, radio, television, and magazine copy through supervised work with University communication media.
425. **Journalism Internship (6). Summer. Pr., JM 221, 223, 224, and consent of instructor.**
A full-time internship of at least ten weeks with an approved publication, serving as a regular staff member under the direction of the editor.
465. **The History and Principles of Journalism (5).**
The development of the American Press, the principles and ideals of modern journalism, and the law of the press and radio.

GRADUATE COURSES

605. **Agricultural Newswriting (3). Lec. 4. Pr., 20 hours of Journalism or consent of instructor.**
Methods and problems of writing agricultural and home economics news, feature articles, and columns for publication. Special attention is given to improving communication of effectiveness between the specialist and the public.

Laboratory Technology (LT)

*Head Professor Wheatley
Instructor Attleberger*

Special Lecturer in Medical Technology F. B. Schultz, M.D.

101. **Orientation (1). Fall and Winter quarters.**
Aims, objectives, and requirements for careers in Medical and Laboratory Technology.
301. **Hematology (5). Lec. 3, Lab. 6.**
Study, procedures, and examinations of the blood, as recommended by the American Society of Clinical Pathologists.

305. Serology (5). Lec. 2, Lab. 6. Pr., VM 204.
Theory and techniques of laboratory tests based on the antigen-antibody reaction.
401. Advanced Hematology (5). Lec. 3, Lab. 6. Pr., LT 301.
Advanced study of blood cells and blood dyscrasias.
402. Seminar in Laboratory Technology (3). Pr., LT 301.
The student reports from the literature on recent advances in the field of laboratory technology.
405. Advanced Serology (5). Lec. 2, Lab. 6. Pr., LT 305.
Theory and techniques of the serological study of human blood.
421. Diagnostic Apparatus (5). Lec. 2, Lab. 9. Pr., PS 206.
Use of such hospital equipment used in X-ray, electrocardiographic, and basic metabolism diagnosis.
422. Hospital Laboratory Practice (5). Lab. 15. Pr., LT 301, LT 421.
Practical applications of the principles, procedures, and techniques encountered in hospital laboratories.
423. Advanced Hospital Laboratory Practice (5). Lab. 15. Pr., LT 422.

Library (LY)

101. Use of the Library (1).

Lectures and assignments designed to facilitate use of the card catalog, periodical indexes and the compilation of bibliographies. Taught by library staff members. Note: School Library Science courses are listed in the Interdepartmental Education heading.

Mathematics (MH)

Head Professor Burton

Research Professors Haysworth and Ikenberry

Professors Ball, Butz, B. Fitzpatrick, Parker, Perry, E. Williams

Associate Professors Baskerville, Calder, P. Fitzpatrick, R. Ford, C. Robinson, Thompson, L. Williams

Assistant Professors Bennett, Brown, Coleman, Darwin, J. Ford, Guenther, Hinrichsen, Murrell, Reed, Sanders*

Instructors E. Ball, Bass*, Bean*, Brasse*, Crocker*, Hartwig*, Hill*, Howard*, Lauer*, Moe*, Murphy*, Powell*, Van Cleave**

107. College Algebra (5).

121-22. College Mathematics (5-5).

MH 121 is an algebra course designed to prepare students for MH 122 which treats the differential and integral calculus of algebraic, exponential and logarithmic functions. This sequence is not to be taken by students whose curriculum requires MH 160 or MH 161.

160. Algebra and Trigonometry (5).

Basic analytic and geometric properties of the algebraic and trigonometric functions. Designed to prepare students for MH 161.

161-2-3. Analytic Geometry and Calculus (5-5-5). Pr., MH 160.

First three quarters of a four-quarter sequence for technical students.

220-21-22. Introduction to Analysis I, II, III (5-5-5). Pr., MH 163.

The real number system leading to theorems concerning number sets, sequences and graphs of functions; Riemann-Stieltjes integration, continuity, the derivative and functions of bounded variation; functions whose domains are in Euclidean spaces.

264. Analytic Geometry-Calculus (5). Pr., MH 163.

A continuation of MH 161-2-3. Infinite series, partial derivatives, multiple integrals.

281-2. Elementary Mathematics (5-5). Pr., sophomore standing.

These courses are designed to provide appropriate mathematical insights for elementary school teachers. Emphasis is on the structure of the number systems. MH 282 includes an introduction to algebra and geometry.

331-32-33. Introduction to Modern Algebra I, II, III (5-5-5). Pr., MH 163.

Sets, mappings, the integers, isomorphisms, and homomorphisms; groups, rings, fields, ideals; factorization problems, Euclidean domains, extension, fields, vector spaces.

340. Elementary Topology of the Line and Plane (5). Pr., MH 162 or consent of instructor.

Elementary set theory, the limit concept, basic topological properties of Euclidean spaces of one and two dimensions.

* Temporary.

361. Differential Equations (5). Pr., MH 264.
Ordinary differential equations with applications.
362. Engineering Mathematics I (5). Pr., MH 361.
Fourier series, Laplace transforms, partial differential equations, special functions.
367. Mathematical Statistics I (5). Pr., MH 122 or 162.
Descriptive statistics, elementary probability and sampling theory, least squares and correlation.
403. Engineering Mathematics II (5). Pr., MH 361; junior standing.
Complex numbers, functions, mappings, residues, contour integration.
404. Engineering Mathematics III (5). Pr., MH 361; junior standing.
Vector analysis, with applications.
405. Matrix Theory and Applications (5). Pr., MH 162; junior standing.
Canonical forms, determinants, linear equations, characteristic value problems.
406. Elementary Partial Differential Equations (5). Pr., MH 361; junior standing.
First and second order linear partial differential equations with emphasis on the method of eigenfunction expansions.
407. Introduction to Celestial Mechanics (5). Pr., consent of instructor; junior standing.
Dynamics of a particle, two-body problem, coordinate transformations, series expansions in elliptic motion, introduction to general perturbation theory.
- 420-21-22. Analysis I, II, III (5-5-5).** Pr., MH 264; junior standing.
An advanced treatment of the topics of MH 220-21-22 (real number sets, sequences and graphs of functions; Riemann-Stieltjes integration, continuity, the derivative and functions of bounded variation; functions whose domains are in Euclidean spaces).
Duplicate credit will not be given for corresponding courses in the MH 220-21-22 and MH 420-21-22 sequences.
428. Linear Differential Systems (5). Pr., MH 421 or consent of instructor; junior standing.
Systems of linear ordinary differential equations, series solutions, approximate solutions.
431. Modern Algebra (5). Pr., one junior-senior level course in algebra.
Integral domains, groups, rings, fields.
435. Theory of Numbers I (5). Pr., MH 331; junior standing.
Theorems on divisibility; prime numbers; congruences; theorems of Fermat, Euler, and Wilson; power residues.
437. Linear Algebra (5). Pr., MH 333 or MH 431; junior standing.
Linear transformations, matrix algebra, finite-dimensional vector spaces.
443. Linear Geometry (5). Pr., MH 163; junior standing.
Transformations in projective, affine, and Euclidean planes.
444. Combinatorial Geometry in the Plane (5). Pr., MH 163; junior standing.
Helly's and related theorems.
447. Foundations of Plane Geometry (5). Pr., MH 264; junior standing.
Axiomatic development of a plane geometry. Points, lines, congruences. Emphasis is placed on development of proofs by students.
460. Introduction to Numerical Analysis (5). Pr., MH 361 or MH 428; junior standing; a knowledge of an algorithmic computer language available at the Computer Center.[†]
Polynomial approximation, numerical differentiation and integration, solution of ordinary differential equations (initial value problems) error analysis.
461. Numerical Matrix Analysis (5). Pr., MH 264, and MH 405 or MH 437; junior standing; a knowledge of an algorithmic computer language available at the Computer Center.[†]
Numerical solution of algebraic equations and of systems of linear equations, solution of boundary value problems, numerical calculation of characteristic values and vectors, error analysis.
464. Probability Theory (5). Pr., MH 420 or MH 221 or consent of instructor; junior standing.
Complete probability fields, probability functions, random variables, convergent sequences of random variables, conditional probability, distribution functions, various applications.
- *480. Mathematics of Computation (5).** Pr., MH 162; junior standing.
Various numerical methods of problem solution, programming these methods using an algebraic compiler.

[†] This information can be obtained by taking IE 204.

* Not available to graduate students in the areas of science or mathematics.

- *481. **College Geometry** (5). Pr., MH 162; junior standing. Classical Euclidean geometry; loci; indirect construction; the nine-point circle; homothetic figures. (Not for majors in science and mathematics.)
- *485. **Fundamentals of Algebra I** (5). Pr., MH 162; junior standing. The structure of the integers, factorization of the integers, congruent theory.
- *486. **Foundation of Geometry** (5). Pr., MH 162; junior standing. Euclidean and non-Euclidean geometries with emphasis given to their logical development from basic assumptions. Some attention given to the history of geometry.
- *487. **Fundamentals of Analysis** (5). Pr., MH 162; junior standing. A study of mathematical analysis with emphasis on basic principles and relationships. (Not for majors in science and mathematics.)
491. **Special Problems** (1-5). Pr., consent of instructor; junior standing. Not open to graduate students. An individual problems course. Each student will work under the direction of a staff member on some problem of mutual interest.

GRADUATE COURSES

- 602-3. **Celestial Mechanics I, II, III** (5-5). Pr., MH 407 or consent of instructor. Elliptic motion, potentials of attracting bodies, numerical integration and differential correction of orbits, lunar theory, theory of perturbations, Lagrange's method and introduction to canonical variables, the disturbing function, artificial satellite orbit theory.
- 607-8-9. **Applied Mathematics I, II, III** (5-5-5). Pr., approved graduate standing. Scalar, vector, and dyadic fields; equations governing fields; Helmholtz's and Laplace's equations in curvilinear coordinates; separation of variables; boundary conditions and eigenfunctions; Green's functions.
610. **Special Functions** (5). Pr., consent of instructor.
613. **Tensor Analysis** (5). Pr., consent of instructor.
- 620-21. **Functions of Real Variables I, II** (5-5). Pr., MH 422. Measure theory and Lebesgue Integration.
- 622-23. **Functions of a Complex Variable I, II** (5-5). Pr., MH 422. Complex numbers; analytic functions; derivatives, Cauchy integral theorem and formula; Taylor and Laurent series; analytic continuation; residues; maximum principle; Riemann surfaces; conformal mapping; families of analytic functions.
- 624-25-26. **Linear Topological Spaces I, II, III** (5-5-5). Pr., MH 422. Bounded linear transformations and linear functionals on Banach and Hilbert spaces, including conjugate spaces, adjoint operators, self adjoint operators, spectral theory, applications to particular spaces.
- 628-29. **Advanced Theory of Differential Equations** (5-5). Pr., MH 422. Existence, uniqueness and continuation theorems for ordinary and partial differential equations; nature of solutions. The first quarter will be devoted to ordinary equations, the second to partial differential equations.
- 631-32. **Modern Algebra I, II** (5-5). Pr., MH 431. Numbers; sets; groups; rings; fields of polynomials; Galois theory.
633. **Theory of Groups** (5). Pr., MH 631. Sylow theory, abelian groups, chain conditions.
634. **Theory of Rings** (5). Pr., MH 631. Structure of rings, ideals in commutative rings.
- 637-8-9. **Matrices** (5). Pr., MH 437. Special types of matrices; reduction to canonical form; function of matrices; readings in current literature.
- 640-41-42. **Functional Analysis** (5-5-5). Pr., MH 626 or consent of instructor. Topics in the advanced theory of linear functionals and operators on Banach and Hilbert spaces, chosen to lead students into research work in this field.
- 645-46. **Differential Geometry I, II** (5-5). Pr., MH 422. Tensor analysis; curves and surfaces in Euclidean space; introduction to Riemannian geometry of n-dimensions.
- 650-51-52. **General Topology** (5-5-5). Pr., consent of instructor. An axiomatic development of point-set topology; connectivity, compactness, separability, topological equivalence, well-ordering, inner limiting sets, Cartesian products.
653. **Dimension Theory** (5). Pr., consent of instructor. The topological study of dimension in separable metric spaces.
- 654-55. **Point Set Topology** (5-5). Pr., MH 652. Upper semi-continuous collections, indecomposable continua, metrization problems, other topics.

^a Not available to graduate students in the areas of science or mathematics.

- 657-58. Algebraic Topology (5-5). Pr., consent of instructor.
The fundamental group, homology groups, simplicial complexes, other topics.
661. Advanced Numerical Analysis (5). Pr., MH 461, and MH 361 or MH 428.
Numerical solution of partial differential equations.
667. Mathematical Statistics II (5). Pr., MH 367.
Advanced probability and sampling theory, advanced regression and correlation, analysis of variance, Monte Carlo method, factor analysis.
668. Mathematical Statistics III (5). Pr., MH 667.
Estimation, experimental design, non-parametric methods, sequential analysis, game theory, linear programming, covariance techniques.

Note: Courses 683 through 687 listed below are for Education majors and are not available to graduate students in science or mathematics. They are offered in summer only.

683. Number Systems (5). Pr., approved graduate standing.
Detailed construction of the number system with close attention paid to the logic employed. This course is intended to furnish the high school teacher with a thorough understanding of the number system and its role in high school algebra and analysis.
685. Fundamentals of Algebra II (5). Pr., approved standing.
Number fields, including the fields of rational, real and complex numbers; the algebra of polynomials over a field; factorization of polynomials; and theory of equations.
687. Fundamentals of Analysis II (5). Pr., MH 487.
Continuation of MH 487 with the introduction of more sophisticated ideas, e.g., the completeness axiom, continuity and inverse functions.
691. Directed Reading in Algebra (Credit to be arranged.) Pr., 10 hours of 600 courses in the area.
692. Directed Reading in Analysis. (Credit to be arranged.) Pr., 10 hours of 600 courses in the area.
693. Directed Reading in Applied Mathematics. (Credit to be arranged.) Pr., 10 hours of 600 courses in the area.
694. Directed Reading in Geometry. (Credit to be arranged.) Pr., 10 hours of 600 courses in the area.
695. Directed Reading in Topology. (Credit to be arranged.) Pr., 10 hours of 600 courses in the area.
696. Directed Reading in Matrix Theory. (Credit to be arranged.) Pr., 10 hours of 600 courses in the area.
697. Directed Reading in Numerical Analysis. (Credit to be arranged.) Pr., 10 hours of 600 courses in the area.
699. Research and Thesis. (Credit to be arranged.) May be taken more than one quarter.
799. Research and Dissertation. (Credit to be arranged.)

Mechanical Engineering (ME)

Head Professor Vestal

Professor and Assistant Head Professor Jones

*Professors Barbin^{**}, Jemian, Lawson, Maynor, Shaw, Swinson, and Tanger*

Alumni Professor Vachon

Associate Professors Cooley, Fluker, Reece, Scarborough, Smith, and Ward

Assistant Professors Benzel, Dunn, Dyer, Harmon, Leppert, Maples, and Yu

*Instructors Busch, Cheng^{**}, Nix, Ranson, Reiter, and Terrill*

Visiting Lecturer Touloukian

202. Engineering Materials Science—Structure (3). Pr., CH 103, PS 201 or PS 205.
Theories and structures of crystalline and amorphous materials. Bonding, crystal classes, phase equilibrium relationships, diffusion and phase transformations.
205. Applied Mechanics—Statics (4). Lec. 3, Lab. 2. Pr., PS 201, corequisite, MH 263.
Resolution and composition of forces; equilibrium of force systems; friction, centroids; moments of inertia.

* Temporary.

** On leave.

208. **Strength of Materials I (4).** Lec. 3, Lab. 2. Pr., ME 205 and MH 263. Fundamentals of stress and strain; stress-strain relations; temperature effects, bar with axial force, thin-wall cylinders; torsion; beams; columns.
301. **Thermodynamics I (4).** Lec. 3, Lab. 2. Pr., MH 263 and PS 202. (Excludes credit in ME 310.) Law of thermodynamics; work, heat, and properties; relationships among properties; equations of state; simple processes and cycles.
302. **Thermodynamics II (4).** Lec. 3, Lab. 2. Pr., ME 301. Thermodynamic analysis of real and ideal cycles, and concepts of compressible fluid flow.
303. **Thermodynamics III (4).** Lec. 3, Lab. 2. Pr., ME 301. Property determination, Maxwell's relations, thermodynamics of mixtures, combustion and chemical equilibrium.
304. **Engineering Materials Science—Properties (3).** Pr., ME 202, ME 208. Relationships between structure and properties and the effects of environment. Mechanical properties, plasticity of single and poly-crystals, and properties of composite materials.
307. **Applied Mechanics—Dynamics (5).** Pr., ME 205 and MH 263. Types and principles of motion; action of unbalanced force systems affecting the motion of rigid bodies.
308. **Computation Laboratory (1).** Lec. 1, Lab. 2. Pr., MH 361. Applications of analog and digital programming in Mechanical Engineering.
309. **Materials Testing Laboratory (1).** Lab. 3. Pr., ME 208. Testing of engineering materials in tension, in compression, and for hardness.
310. **Thermodynamics (5).** Pr., MH 263 and PS 202. Gases and vapors, cycles, mass and heat transfer. (For non-Mechanical Engineering students only.) (Credit in ME 310 excludes credit in ME 301 and 302.)
311. **Measurements I (2).** Lec. 1, Lab. 3. Pr., ME 308. The theory and practice of mechanical engineering measurements, including treatment of experimental data and the design of experiments.
316. **Strength of Materials II (4).** Pr., ME 208, MH 361. Continuation of ME 208. Thick walled cylinders; curved beams; introduction to stability; theories of failure; energy.
319. **Elementary Heat Power (5).** Pr., CH 104, PS 205, MH 162. Power plant equipment, fuels and combustion, spark ignition and compression ignition engines, steam and gas cycles. (For non-Mechanical Engineering students only.)
321. **Dynamics of a Particle (4).** Lec. 3, Lab. 2. Pr., ME 205 and MH 263. Motion of a particle; Newtonian potential; force, mass, and acceleration for plane and three-dimensional motion.
322. **Dynamics of Systems of Particles (4).** Lec. 3, Lab. 2. Pr., ME 321. Relative motion; force, mass, and acceleration of rigid bodies; work and energy; impulse and momentum; conservation of linear and angular momentum.
323. **Dynamics of Machines (4).** Lec. 3, Lab. 3. Pr., ME 208 and ME 322. Angular and linear velocities and accelerations in machines; acceleration stresses in machine parts; balancing of slider crank mechanisms; crankshaft balancing; critical speeds of variable cross-section shafting; kinematics of gearing and the determination of gear forces.
324. **Fluid Mechanics I (4).** Lec. 3, Lab. 2. Pr., ME 322, and ME 301 or ME 310. Definitions and concepts; fluid statics; conservation of mass, momentum and energy; viscosity and its effects.
325. **Fluid Mechanics II (4).** Pr., ME 324; coreq., ME 302. Continuation of ME 324. Dimensional analysis; model testing; potential theory; compressible flow; applications to turbomachines.
327. **Mechanical Vibrations (4).** Pr., ME 208, ME 322, and junior standing. Theory of vibration of systems of one or more degrees of freedom, with and without damping; systems with distributed constants and self-induced vibration.
335. **Engineering Materials Science—Physical Metallurgy (4).** Lec. 3, Lab. 3. Pr., ME 304. Relationship between structure and properties of metals. Melting and solidification, crystal structure, dislocation and imperfection theories, alloying, deformation, and transformations.
336. **Metallography and Heat Treatment I (4).** Lec. 3, Lab. 3. Pr., ME 335, PS 202. Analysis and interpretation of metallic structures with principal emphasis on the principles and practice of optical metallography. Samples will be heat treated and processed by the students according to the principles of the science of metals.
337. **Metallography and Heat Treatment II (4).** Lec. 3, Lab. 3. Pr., ME 336, PS 413. The analysis and interpretation of metallic structures utilizing a variety of techniques such as optical microscopy, thermal analysis, X-ray diffraction and radiography. Students will heat treat their own samples for analysis.

- 338. Phase Diagrams (4).** Lec. 3, Lab. 3. Pr., ME 335, CH 412.
Methods of representing and interpreting phase equilibria. Binary and multicomponent systems. Simpler temperature-composition systems and more complex temperature-pressure-composition systems. Major emphasis on applications. Minor emphasis on phase diagram determination and thermodynamics.
- 401. Statistical Thermodynamics (4).** Lec. 3, Lab. 2. Pr., ME 303 and junior standing.
Study of the fundamental laws of thermodynamics and thermodynamic properties from the microscopic point of view.
- 413. Measurements II (1).** Lab. 3, Pr., ME 311.
A continuation of ME 311. Instrumentation for dynamic measurements in mechanical engineering.
- 414. Turbomachines (4).** Pr., ME 324 or CE 308, junior standing.
Applications of fluid mechanics to turbomachines, such as pumps, turbines, and fluid couplings; control devices.
- 415. Thermodynamics of Power Systems (4).** Pr., ME 302, ME 303, ME 325, ME 421 and senior standing.
Design and development of static and dynamic thermal power systems.
- 420. Thermal Systems Laboratory (2).** Lec. 1, Lab. 3. Pr., ME 311 and ME 415.
Selected laboratory experiments and reports on thermal systems evaluation.
- 421. Heat Transfer (4).** Pr., ME 301, ME 324 or AE 301, EE 372, MH 362, and junior standing.
Fundamental principles of heat transfer by steady and unsteady conduction, thermal and luminous radiation, boiling and condensation, free and forced convection.
- 422. Transport Phenomena (4).** Pr., ME 421, and junior standing.
Transport phenomena involving mass, momentum, and energy transfer coupled with chemical alterations in single phase or multicomponent media.
- 425. Gas and Steam Turbines (4).** Pr., ME 302 and senior standing.
Thermodynamic theory and design of nozzles and blade paths for gas and steam turbines.
- 428. Air Conditioning and Refrigeration (4).** Pr., ME 302 or ME 310 and junior standing.
Theory and design of heating, cooling and ventilating systems, and refrigeration systems, including cryogenics.
- 432. Automatic Controls (4).** Pr., MH 361, ME 322, ME 324, EE 362, and junior standing.
Process analysis; methods of control; closed loop in control; feedback systems; analysis of system problems.
- 434. Fluid Mechanics and Heat Transfer (5).** Pr., ME 310 and junior standing.
The mechanics of compressible and incompressible fluids and the transmission of heat by conduction, convection, and radiation. (For non-Mechanical Engineering students only.)
- 436. Engineering Materials Science—Ferrous Metallurgy (4).** Lec. 3, Lab. 3. Pr., ME 335 and junior standing.
Design of ferrous metals following modern theory and practice. Hardenability, alloying, deformation, and special purpose steels.
- 437. Engineering Materials Science—Nonferrous Metallurgy (4).** Lec. 3, Lab. 3. Pr., ME 335 and junior standing.
Design of nonferrous metals following modern theory and practice. Aluminum and copper-beryllium systems, corrosion resistant alloys, refractory metals, strengthening mechanisms, spacecraft environments.
- 438. Residual Stresses in Metals (4).** Pr., 335, and junior standing.
Production and measurement of residual stresses in metals; relation of residual stresses to fatigue; consideration of fatigue in design.
- 439. Machine Design I (4).** Lec. 3, Lab. 3. Pr., ME 304, ME 323; coreq., ME 335.
Design of machine elements for static and dynamic stresses with the emphasis on synthesis and creative design.
- 440. Machine Design II (4).** Lec. 3, Lab. 3. Pr., ME 439, ME 327, ME 316, ME 335.
Continuation of ME 439, considering more advanced topics and the design of complete machines.
- 441. Engineering Systems I (4).** Lec. 3, Lab. 3. Pr., senior standing and approval of Department Head.
Typical problems requiring the development of skill in the use of analysis, synthesis and creativity to design, evaluate, and optimize engineering systems.
- 442. Engineering Systems II (4).** Lec. 3, Lab. 3. Pr., ME 441.
A continuation of ME 441.

443. Photoelastic Stress and Strain Analysis (4). Lec. 3, Lab. 3. Pr., ME 208, and junior standing.
Theory of the polariscope, two and three dimensional photoelastic model making and preparation, techniques of data from photoelastic models, determination of principal stresses from photoelastic data, and transition from model stresses to prototype stresses.
446. Advanced Physical Metallurgy—Theoretical Metallurgy (4). Lec. 3, Lab. 3. Pr., ME 335, CH 408, PS 203.
The study of the physical properties of metals in relation to the modern theories of metals.
447. Advanced Physical Metallurgy—Plasticity (4). Lec. 3, Lab. 3. Pr., ME 335, ME 316.
The macro- and micro-processes involved in the plastic deformation of metals. Slip, twinning, dislocation theory, creep, fatigue, impact, high velocity deformation, and other plastic deformation processes will be studied in relation to current knowledge.
450. Special Problems. (Credit 1-5.) Pr., Department Head approval, junior standing.
Individual student endeavor under staff supervision involving special problems of an advanced nature.
451. Advanced Projects (3). Lec. 1, Lab. 6. Pr., ME 421, ME 316, ME 325, ME 323, and senior standing.
Individual projects of a current nature, involving both analysis and synthesis, culminating in a formal report.

GRADUATE COURSES

600. Fluid Dynamics (3). Pr., MH 404 and graduate standing.
Navier-Stokes Equations. Exact and approximate solutions. Euler's equations. Continuity, Energy equations. Irrotational flow. Crocco's theorem. Creeping flow. Turbulence and Reynolds' Equations.
601. Boundary Layer Theory (3). Pr., ME 600 or CE 612.
Hydrodynamic, thermal, mass and magnetic boundary layers. Prandtl's equations. Momentum equations. Energy equations.
602. Gas Dynamics I (3). Pr., ME 600 or CE 612.
Compressible flow equations; Isentropic flow; Fanno line flow; Rayleigh line flow; shock waves; high speed flow; internal and external flows; forces on immersed bodies.
603. Gas Dynamics II (3). Pr., ME 600, ME 602, or consent of instructor.
Supersonic flow theory with emphasis on applications to internal flows with and without heat transfer.
604. Advanced Thermodynamics I (3). Pr., ME 303 and graduate standing.
Classical thermodynamics of reactive and nonreactive systems; applications.
605. Advanced Thermodynamics II (3). Pr., ME 604.
Statistical treatment of the laws and properties of thermodynamic systems; applications.
606. Propulsion Systems (4). Pr., departmental approval.
Chemical systems including liquid and solid rocket engines; thermionic engines and ionic propulsion; plasma and nuclear propulsion systems.
607. Energy Conversion Systems (3). Pr., ME 415 or departmental approval.
Electromechanical energy conversion; thermoelectricity; thermoionic converters; photovoltaic conversion; magnetohydrodynamic generators; fuel cells.
608. Advanced Thermodynamics III (3). Pr., ME 605.
Thermodynamics of nonequilibrium processes.
612. Engineering Analysis (3). Pr., departmental approval.
Equilibrium, eigenvalue, and propagation problems for continuous systems. Physical laws and mathematical properties discussed with considerable emphasis on numerical solutions.
615. Experimental Research Methods (3). Pr., departmental approval.
Numerical methods and data processing, mathematical statistics and probability, analysis of experimental data, errors of measurement, and instrumentation.
616. Fluid Machines (3). Pr., ME 602.
Similarity considerations; cavitation; cascade theory; axial and radial flow machines.
617. Turbulence (3). Pr., ME 600 and ME 601.
Analysis of wall-affected and free turbulent flows.
620. Heat Transmission—Conduction (3). Pr., ME 421.
Fourier's general equation, influence of heat sources and sinks, analog and numerical methods of solving heat transfer problems; heat transfer from extended surfaces, transient heat transfer with steady and unsteady boundary conditions.
621. Heat Transmission—Convection (3). Pr., ME 421.
General problems of convection, forced convection heat transfer, free convection, thermodynamic boundary layers, condensing and boiling, heat transfer to liquid metals and analysis of heat exchangers.

622. **Heat Transmission—Radiation (3).** Pr., ME 421.
Fundamental laws of radiation, net radiation methods, configuration factors, radiation through absorbing media, solar terrestrial and celestial radiation, and thermometry and temperature control.
630. **Advanced Strength of Materials (3).** Pr., ME 316, MH 361, or departmental approval.
Selected topics in strength of materials. Beam on elastic foundation, graphical representations of three dimensional stress state, bending of curved bars, theories of failure.
631. **Theory of Elasticity I (3).** Pr., departmental approval.
Three dimensional theory of stress and strain for small deformations. Applications to problems of plane stress and plane strain. Solutions by Airy Stress function and Kolosov-Musk-helishvili methods.
632. **Theory of Elasticity II (3).** Pr., ME 631.
Selected topics in three dimensional problems. Torsion of bars, bending of prismatic bars, thermal stresses, introduction to the general (non-linear) theory of elasticity.
633. **Experimental Stress Analysis (3).** Pr., ME 316 or departmental approval.
Relationship between strains and stresses. Use is made of modern experimental stress analysis techniques such as electric resistance strain gages, photoelasticity, brittle coatings, and photostress.
634. **Elastic Stability (3).** Pr., ME 631, CE 633 or departmental approval.
Buckling failure of columns by bending, twisting or shear; lateral buckling of beams; shear buckling; buckling of thin plates and shells. Applications to problems.
635. **Intermediate Dynamics (3).** Pr., ME 325, MH 361.
Dynamics of particles and systems of particles applied to engineering problems. Work and energy, and impulse and momentum principles. LaGrange's equations and Hamilton's principle.
636. **Non-Linear Oscillations (3).** Pr., ME 325, ME 427, or departmental approval.
Free, forced, and self-excited oscillations in mechanical systems. Relaxation oscillations, response curves and stability considerations.
637. **Theory of Plates (3).** Pr., departmental approval.
Analysis of stress, strain, and deformation of plates under applied transverse loads. Applications to plates of different geometries with various boundary conditions.
638. **Theory of Shells (3).** Pr., departmental approval.
Analysis of stress, strain and deformation of shells under applied loads.
639. **Variational Mechanics (3).** Pr., consent of instructor.
The problem of Belza, Mayer and LaGrange with fixed and variable end points; Hamilton's principle and LaGrange's equations; energy method; Rayleigh's principle and Rayleigh-Ritz method; Galerkin method; variational methods; applications.
660. **Metallurgy of the Solid State (3).** Pr., departmental approval.
Basic principles relating to the behavior of materials. Ultimate structure of matter, crystalline structures, thermodynamic stability and reaction kinetics are discussed along with bonding, dislocations, polycrystalline structures, mechanical and thermal properties, electronic conduction, semi-conduction, and insulation. Considerable emphasis on application to real problems, predominantly of the engineering type.
661. **Metallurgy of Corrosion (3).** Pr., departmental approval.
Nature and mechanism of corrosion. Effect of manufacturing methods including heat treatment. Effect of environment. Corrosion types and methods of corrosion prevention.
662. **Performance of Metals at Elevated Temperatures (3).** Pr., departmental approval.
Fundamental behavior of metals at elevated temperatures. Commercial and experimental types of ferrous and non-ferrous alloys and their suitability for elevated temperature applications.
663. **X-ray Metallography (3).** Pr., ME 335 and MH 361.
The principles of X-ray absorption and diffraction and application to the study of metals and other crystalline materials.
665. **Strengthening of Metals (3).** Pr., ME 335.
A treatment of the six basic mechanisms by which metals are strengthened. Emphasis is placed on causative factors and accompanying manifestations.
666. **Plasticity of Metals (3).** Pr., ME 335.
A quantitative treatment of: the minimization of plastic flow, by means of design considerations, where the phenomenon is associated with deleterious effects; the maximization of plastic flow, by means of material-condition and forming method considerations, where the objective is to form or shape.
667. **Dislocation Theory (3).** Pr., consent of instructor.
Study of nature and properties of dislocations including crystal structure and imperfections, dislocation geometry in both ideal and real crystals, dislocation configurations, multiplication and intersections with various imperfections, and methods of observation.

675. Analysis of Mechanisms (3). Pr., ME 323.
The analysis of mechanisms by various techniques. Mechanisms of higher and lower complexity. Plane motion theory, space mechanisms, and introduction to synthesis.
676. Synthesis of Mechanisms (3). Pr., ME 675.
Methods of synthesis using finite displacement techniques. Plane motion theory and its application to infinitesimal motion synthesis. Introduction to gross motion.
677. Selected Topics in Mechanical Design (3). Pr., ME 630 and ME 675.
Dynamic properties of trains of mechanisms; hydrostatic and hydrodynamic lubrication; thermal equilibrium; wear and fatigue problems; design techniques involving computers.
690. Seminar (credit to be arranged). May be taken more than one quarter.
691. Directed Reading in Mechanical Engineering (credit to be arranged). May be taken more than one quarter.
699. Research and Thesis (credit to be arranged). May be taken more than one quarter.
799. Research and Dissertation (credit to be arranged). May be taken more than one quarter.

Military Science (MS)

BASIC COURSE

First Year (Freshman)

Military Science I

101. Organization of the Army and ROTC; United States Army and National Security; Individual Weapons and Marksmanship; Leadership Laboratory (1). Lec. 3, Drill 2.
102. Leadership Laboratory (1). Drill 2.
103. Leadership Laboratory (1). Drill 2.

Second Year (Sophomore)

Military Science II (Pr., MS I or as determined by the Professor of Military Science).

201. American Military History (1). Lec. 2, Drill 2.
The origins of the American Army to the present with emphasis on factors which led to the organizational, tactical, logistical, operational, strategic, social, and similar patterns found in the present day Army.
202. Map and Aerial Photograph Reading (1). Lec. 2, Drill 2.
Application of basic principles, emphasizing terrain appreciation and evaluation; marginal information; military and topographic map symbols; orientation; intersection; resection; military grid reference system; classes of aerial photography and elementary aerial photography reading.
203. Introduction to Operations and Basic Tactics (1). Lec. 2, Drill 2.
Instruction in the basic military team; combat formations and patrolling; field fortification and camouflage, cover and concealment; technique of fire and principles of offensive and defensive combat.

ADVANCED COURSE

Third Year (Junior)

Military Science III (Pr., all MS I and MS II or equivalent as determined by Professor of Military Science).

301. Military Teaching Principles and Leadership (3). Lec. 4, Drill 2.
Educational psychology as pertains to five stages of instructional technique; responsibilities and basic qualities of a leader; leadership principles, traits and techniques.
302. Branches of the Army and Communications (3). Lec. 4, Drill 2.
Familiarization with all branches of the Army so that a cadet may select the branch in which he wishes to be commissioned; principles and methods of communications.
303. Small Unit Tactics (3). Lec. 4, Drill 2.
Infantry organization; principles of offensive and defensive combat; guerrilla warfare.

Fourth Year (Senior)

Military Science IV (Pr., MS III or as determined by the Professor of Military Science).

- 401. Operations (3).** Lec. 4, Drill 2.
Origin and purpose of staff; relationship between commanders and their staffs.
- 402. Logistics and Army Administration (3).** Lec. 4, Drill 2.
Functioning of staffs; mission of supply, supply doctrine and principles; classes of supply; familiarization with Army publications, forms, records, reports and administrative system.
- 403. Military Law, Role of US in World Affairs and Service Orientation (3).** Lec. 4, Drill 2.
Functioning of military law system; relation of military law to civil law; types of conflict; inter-relationship of elements of national power; customs of the service; code of conduct, responsibilities and obligations of an officer.

Music (MU)

Head Professor Campbell

Professors Glyde, Hinton, Tamlyn, Rosenbaum, and Sykes

Associate Professors Bentley, Moore, and Walls

Assistant Professors Rawlins, Calder, Lavore, Stephenson, and Jordan

Instructor Hunter

- 100. Music Convocation (0).** All quarters. Required of all music students each quarter.
Performance & lectures by faculty, guest artists, and students.
- 131-32-33. Material and Organization of Music (5-5-5).**
A systematic study of harmony, counterpoint, form and style through the literature of music.
- 211-12. Service Playing (1-1).**
Hymn playing, modulation, selected anthems and oratorio selections, simple improvisation and transposition.
- 231-32-33. Music Theory IV-V-VI (3-3-3).** Pr., MU 133.
Continuation of composite theory through chromatic harmony; analysis of larger forms; continued music reading and keyboard harmony.
- 251-52-53. Survey of Music Literature (1-1-1).** Lec. and Lab. 3-3-3.
Presentation of instrumental solo, opera and symphonic music, acquainting the student with musical compositions and composers with emphasis on music literature of the past three centuries.
- 311. Liturgies (3).**
Liturgical worship service of Roman Catholic and Protestant churches, plus non-liturgical forms of other Protestant denominations.
- 312. Hymnology (3).**
The musical significance of hymns of the Christian church from earliest times to the present.
- 331-32-33. Modern Harmony I-II-III (3-3-3).** Pr., MU 233.
Twentieth-century harmonic devices. An integrated approach to understanding contemporary writing, with emphasis on original work and analysis of the principal departments from "traditional" harmony.
- 334-35-36. Counterpoint I-II-III (3-3-3).** Pr., MU 233.
I. Strict Counterpoint. Counterpoint in 5 species in 2 or 3 voices concluding with invertible counterpoint. II. Tonal counterpoint. Contrapuntal devices of the 18th Century including double counterpoint and imitation. III. Invention and Fugue. The study and writing of 2 part inventions, canonic treatment, and the 3 voice fugue.
- 351-52-53. Music History I-II-III (3-3-3).**
Development of music from early times to the present day. Lectures, recorded examples, readings.
- 361-62-63. Conducting I-II-III (3-1-1).** Pr., MU 133, MU 153.
I. Elementary basic baton techniques and introduction to score reading. II. Choral conducting. Elementary course in choral score reading and conducting choir and glee clubs. III. Instrumental conducting. Elementary course in instrumental score reading and conducting band, orchestra and instrumental ensembles.
- 371. Introduction to Music (3).** No credit allowed to Music Majors and Minors.
The understanding of music including an explanation of basic terms, notations, rhythm, tonal system, vocal and piano score reading.
- 409. Marching Band Techniques (3).**
Fundamental methods and procedures of the Marching Band.
- 414. Care and Repair of Musical Instruments (1).** Lec. 1, Lab. 3. Pr., senior standing.
Selection, care and repair of woodwind, brass and string instruments with emphasis on adjustments which should be made by the instrumental director.

- 415. Organ Literature and Design (3).**
Survey of organ literature correlating the forms of compositions and types of organ for which the music was written.
- 416. Church Music Seminar (3). Pr., MU 311, 312, 361, 362, 415, or 442, or approval of instructor.**
The processes of establishing a complete Church Music program. Supervised directing of choral ensemble.
- 422-23-24. Theory Review (3-3-3). No credit for Applied Theory Composition or Pedagogy Majors.**
Harmonic techniques of the 18th and 19th centuries, with special emphasis on style and design.
- 431-32-33. Music Analysis (3-3-3). Pr., MU 253 and MU 233.**
Harmonic and structural analysis of smaller instrumental forms; harmonic and structural analysis of the larger polyphonic and homophonic forms.
- 434-35-36. Music Composition I-II-III (3-3-3). Pr., MU 233.**
Analysis, study, and writing of musical compositions in small, compound, and larger musical forms with emphasis on both stylistic and individual creative writing.
- 437-38-39. Orchestration I-II-III (3-3-3). Pr., MU 233.**
Ranges, notation, and characteristics of orchestral instruments. Exercises in arranging for combinations of string and wind instruments. Theory and practice of orchestration for full orchestra.
- 441. Piano Pedagogy (3).**
For prospective piano teachers. Study of teaching methods for beginners and succeeding levels. Classification and analysis of teaching repertoire.
- 442. Vocal Pedagogy (3).**
For prospective voice teachers. An intensive study of the materials and methods of voice training. Classification and analysis of teaching repertoire.
- 443. String Pedagogy (3).**
Mechanics of stringed instruments. Teaching methods, schools, and systems. Teaching literature and repertoire.
- 444. Instrumental Pedagogy (3).**
Mechanics of brass or woodwind instruments. Teaching methods and repertoire with emphasis on solo instrumental literature.
- 445. Theory Pedagogy (3).**
Required of seniors majoring in theory and composition. Designed to present the problems of sight-singing, rhythmic dictation, melodic and harmonic dictation, and part writing from a pedagogical viewpoint.
- 451. Keyboard Literature (3). Pr., junior standing.**
Masterworks of the clavichord, harpsichord, organ, and piano literature from the Baroque period to the present.
- 452. Vocal Literature (3). Pr., junior standing.**
Vocal literature from Elizabethan time to the present, including representative European and American repertoire.
- 453. Choral Literature (3). Pr., junior standing.**
Chronological study of choral music from the Middle Ages to the present including opera, and oratorio with detailed examination of representative works.
- 454. Instrumental Literature (3).**
Analysis and study of orchestral scores and parts from the classic, romantic and modern literature.

General Elective Courses

- 372. History of Jazz (3).**
The growth of Jazz from its African and European roots to current experimentation.
- 373. Appreciation of Music (3). May not be taken for credit by Music Majors or Minors.**
Outstanding composers and compositions. No previous music training required; an orientation in the art of listening.
- 374. Masterpieces of Music (3). May not be taken for credit by Music Majors or Minors.**
Representative musical works of each great period of musical history. No previous music training required.
- 401. Fundamentals of Music (3). General elective. No credit for Music Majors or Minors.**
A course in the beginning of music designed primarily for elementary teachers. To develop functional piano sight-reading, rhythm, and melodic skills.

477-78-79. Music Arranging (3-3-3). By permission.

Project course in arranging various combinations from quartet to symphonic band, and arranging for solo and choral groups.

Group Performance Courses**121-22-23. Glee Club (1 hour credit per quarter).**

MEN'S GLEE CLUB AND WOMEN'S GLEE CLUB are study and performing groups open to any Auburn student. (May be taken with or without credit.)

130. Jazz Laboratory Band (1).

A musical ensemble for advanced musicians for the study and performance of music relating to the jazz idiom. By audition only.

221-22-23. Choral Union (1 hour credit per quarter).

Open to any Auburn student. Required for all Music Majors and Minors. (May be taken with or without credit.)

321-22-23. Concert Choir (1 hour credit per quarter).

CONCERT CHOIR is a small mixed chorus for study and performance of serious choral literature; open to any Auburn student by audition only. (May be taken with or without credit.)

124-25-26. Concert Band (1 hour credit per quarter).

Members of the Band are selected during the first week of each quarter. A minimum of 5 rehearsals hours per week is required, with extra rehearsals scheduled as necessary. Band members are required to be present at all rehearsals and all public performances. (May be taken with or without credit.)

127-28-29. Orchestra (1 hour credit per quarter).

Members of the symphonic orchestra are selected by try-outs during the first week of each quarter. (May be taken with or without credit.)

224-25-26. Marching Band (1 hour credit per quarter).

Provides music for athletic contests and half-time shows at football games, various parades, pep rallies, and other campus and off-campus events. During the fall quarter, will rehearse a minimum of 9 hours per week. Physical Education may be waived for members of the Marching Band. See Band Director for details. (May be taken with or without credit.)

227-28-29. Opera Workshop (1 hour credit per quarter).

Open to all students interested in opera, including performance, stage-craft, make-up, conducting, and coaching. A minimum of three hours per week rehearsal or stage-craft is required with extra time scheduled as necessary. (May be taken with or without credit.)

324-25-26. Music Ensemble (1 hour credit per quarter). (By permission.)

Primarily for advanced musicians for the study and performance of musical compositions for small instrumental and vocal groups. A minimum rehearsal of three hours per week required. (May be taken with or without credit.)

327-28-29. Piano Ensemble (1-1-1), Lab. 3-3-3.

Study through performance of original compositions and transcriptions for piano-four-hands and two pianos using two to four players.

Applied Music

Students desiring study in applied music must be approved by the head professor of Music before entrance into the course. In designating instrumental preference the applied study areas listed below should correspond with the appropriate course number and letter.

A. piano	F. oboe	K. French horn
B. voice	G. bassoon	L. tuba
C. clarinet	H. trumpet	M. percussion
D. flute	I. trombone	N. harp
E. saxophone	J. baritone	O. organ

080. Applied Music (0). May be repeated.

Individual instruction in instrumental or vocal areas. Rudimentary practice as related to each discipline.

181-2-3. Applied Music (3-3-3).**281-2-3. Applied Music (3-3-3).****381-2-3. Applied Music (3-3-3).****481-2-3. Applied Music (3-3-3).**

Individual instruction in instrumental or vocal areas. For Bachelor of Music majors only.

- 184-5-6. Applied Music (2-2-2).
 284-5-6. Applied Music (2-2-2).
 384-5-6. Applied Music (2-2-2).
 484-5-6. Applied Music (2-2-2).
 Individual instruction in instrumental or vocal areas. For Music majors in Bachelor of Arts program only.
 187-8-9. Applied Music (1-1-1).
 287-8-9. Applied Music (1-1-1).
 387-8-9. Applied Music (1-1-1).
 487-8-9. Applied Music (1-1-1).
 Individual instruction in instrumental or vocal areas. For students in Elementary and Secondary Education, all music minors, and applied music electives.

The amount of credit in Applied Music is based on the following practice schedule:

- 1 cr. hr.—4 hours weekly practice
 2 cr. hrs.—8 hours weekly practice
 3 cr. hrs.—12 hours weekly practice

Applied Music Fees (Per Quarter)

One half-hour lesson per week	\$20.00
Two half-hour lessons per week	30.00
Class instruction in piano, etc.	5.00
Use of practice room, one hour per day	3.00
Use of practice room, two hours per day	5.00
Instrument rental	3.00

Class Instruction in Applied Music

The Music Department offers a number of classes in Applied Music open to Music Majors and Minors and to regularly registered college students who have had previous music training. These classes meet two hours per week and carry one hour credit. Tuition fee \$5.00. (Minimum of 12 students per class.)

- 104-5-6. Piano Class (1-1-1). (2-2-2 lec. and lab.)
 Class instruction and practice in the rudiments of music as applied to piano playing. (See above for fee.)
 107-8-9. Voice Class (1-1-1). (2-2-2 lec. and lab.)
 Class instruction and practice in the rudiments of music as applied to voice. (See above for fee.)
 110-11-12. String Instruments Class (1-1-1). (2-2-2 lec. and lab.)
 Class instruction and practice in the rudiments of music as applied to violin, viola, cello and contrabass playing. (See above for fee.)
 113-14-15. Brass Instruments Class (1-1-1). (2-2-2 lec. and lab.)
 Class instruction and practice in the rudiments of music as applied to playing on trumpet, trombone and other brass instruments. (See above for fee.)
 116-17-18. Woodwind Instruments Class (1-1-1). (2-2-2 lec. and lab.)
 Class instruction and practice in the rudiments of music as applied to playing on clarinet, oboe, bassoon, flute and other woodwind instruments. (See above for fee.)
 119. Percussion Instruments Class (1). (2 labs.)
 Class instruction and practice in the rudiments of music as applied to playing percussion instruments: drums, bells, cymbals, triangle, tympani, etc. (See above for fee.)

GRADUATE COURSES

- 422-3-4. Theory Review (3-3-3). Pr., senior standing and departmental approval.
 No credit for Applied, Theory-Composition, or Pedagogy majors. A review of the harmonic techniques of the 18th and 19th centuries, with special emphasis on style and design.
- 600-1-2. Advanced Instrumental and Choral Conducting (2-2-2).
 Laboratory for development of skills relating to the performance of traditional and modern works. Emphasis on score reading and analysis.
603. Brass Instruments Techniques (1). Lec. 1, Lab. 3.
 Course designed to work out specific problems with graduate students in furthering their knowledge of and skill on brass instruments.
604. Woodwind Instruments Techniques (1). Lec. 1, Lab. 3.
 Course designed to work out specific problems with graduate students in furthering their knowledge of and skill on woodwind instruments.

- 605. Percussion Instruments Techniques (1). Lec. 1, Lab. 3.**
Course designed to work out specific problems with graduate students in furthering their knowledge of and skill on percussion instruments.
- 609. Seminar in 20th Century Music (3-3-3). Pr., departmental approval.**
Analysis and comparison of representative works of principal composers of the first half of the 20th century. Specific works chosen for each quarter. (May be repeated for a maximum of 9 hrs. credit.)
- 634. Music History Seminar (2). Pr., departmental approval.**
Different aspects of the history of music. Specific research areas chosen each quarter. (May be repeated for a maximum of 6 hrs. credit.)
- 644. Repertoire Seminar (2-2-2). Pr., departmental approval.**
The literature of wind instruments through analysis and performance. (May be repeated for a maximum of 6 hrs. credit.)
- 650-1-2. Techniques of Private Instrumental Instruction (3-3-3). Pr., departmental approval.**
Analysis of teaching and supervised teaching.
- 660-1-2. Independent Study in Applied Music (3-3-3). Pr., departmental approval.**
Advanced private study and recital.
- 665-6. Advanced arranging (5-5). Pr., MU 479 or departmental approval.**
Advanced arranging and transcription for band, orchestra, and chorus.
- 681-2-3. Independent Study in (A) Composition, (B) Analysis (2-3, 2-3, 2-3). Pr., departmental approval.**

Naval Science (NS)

(List of courses will be found on page 163.)

Pharmacy (PY)

Dean Coker

Professors Coker, Hargreaves, Hocking, and Williams

Associate Professors Blanton, Kochhar, Rash, Thomasson, and Wilken

Assistant Professor Hamrick

Instructor Crevar

Research Lecturers in Toxicology Carl J. Rehling and Paul E. Shoffeitt

Pharmacy

- 100. Pharmacy Convocation (0). All quarters.**
Required of all pharmacy students each quarter. Professional topics discussed by visiting lecturers, faculty and students.
- 101. Introduction to Pharmacy (3).**
Orientation and general survey of the scope of pharmacy, its organizations and literature with a brief introduction into principles of pharmacy.
- 102. Pharmaceutical Mathematics (5). Pr., MH 122.**
Mathematical calculations and concepts fundamental to the pharmaceutical sciences.
- 202. Pharmaceutical Terminology (2). Pr., third year standing.**
Common terms and abbreviations used in the professional and scientific aspects of pharmacy and medicine.
- 205. History of Pharmacy (3). Pr., PY 101.**
A general survey of the history of pharmacy designed to provide a knowledge of the heritage of the profession.
- 300. Professional Accessories (3). Pr., fourth year standing.**
The use and capabilities of non-medical professional items such as clinical thermometers, rubber goods, and accessories, atomizers, surgical dressings, surgical supports, trusses.
- 301. Pharmaceutical Technology I (5). Lec. 3, Lab. 6. Pr., CH 208, PY 102, fourth year standing.**
Physical-chemical principles applied to develop thorough understanding of solid pharmaceutical dosage forms from bulk powders to more sophisticated sustained-release medications.
- 303. Pharmaceutical Technology II (5). Lec. 3, Lab. 6. Pr., PY 301, CH 206.**
Continuation of PY 301 in which physical and chemical principles concerning homogeneous liquid dosage forms are studied. Selected official solutions, syrups, elixirs, spirits, etc., are considered from this viewpoint.
- 304. Pharmaceutical Technology III (5). Lec. 3, Lab. 6. Pr., PY 303.**
Continuation of PY 303 dealing with heterogeneous and plastic systems. Physical and chemical principles utilized in the study of the plastic and polyphasic dosage forms including ointments, creams, suspensions, colloids, mixtures, magmas, etc.

308. Hospital Pharmacy Administration (3). Pr., fourth year standing. The development of hospitals, their place in society, importance and place of pharmacy in hospitals, administrative and policy making aspects together with interdepartmental relationships. Field trips to representative hospital pharmacies.
400. Dispensing Pharmacy I (5). Lec. 3, Lab. 6. Pr., PY 304. Compounding of prescriptions of an elementary nature, illustrating virtually all types of prescriptions.
401. Dispensing Pharmacy II (5). Lec. 3, Lab. 6. Pr., PY 400. Advanced dispensing pharmacy and prescription laboratory. Prescriptions of an advanced nature are compounded. Special attention is given to the subject of incompatibilities.
402. Dispensing Pharmacy III (5). Lec. 3, Lab. 6. Corequisite, PY 401. Practical pharmaceutical compounding and dispensing, related to modern drug outlets. Certain aspects of drug detailing will be discussed.
410. Advanced Pharmacy (5). Lec. 3, Lab. 6. Pr., PY 401 and junior standing. The applications of modern pharmaceutical aids, such as surface active agents, the solubilizing agents and the complexing agents in compounding drug formulations.
411. Elements of Pharmaceutical Manufacturing (5). Lec. 2, Lab. 9. Pr., PY 304, consent of instructor, and junior standing. Manufacturing procedures, operation, and principles. In the laboratory selected pilot scale production problems are carried out to completion including control and testing of finished products.
412. Public and Professional Relations (3). Pr., fourth year standing.
413. Special Problems (1-8). Pr., fourth year standing.
414. Pharmaceutical Specialties (3). Pr., fifth year standing. More important non-official specialties available to modern prescription practice and over-the-counter sales are studied.

COURSES FOR GRADUATE STUDENTS

601. Parenteral Preparations (5). Lec. 3, Lab. 6. Pr., 401 and consent of instructor. Theory, preparation and testing of various medicinal preparations intended for injection into the body. Pharmaceutical principles are applied to problems of filtration, sterilization, isotonicity, hydrogen ion concentration and aseptic techniques.
602. Tablet Manufacture (5). Lec. 2, Lab. 9. Pr., PY 401. Essentials in the manufacture, coating and evaluation of compressed tablets.
603. Product Development (5). Lec. 3, Lab. 6. Pr., PY 401. Formulation, evaluation and control techniques as well as actual manufacture of products of pharmaceutical and cosmetic nature.
608. Biopharmaceutics (3). Lec. 2, Lab. 3. Pr., consent of instructor. The relationship between some physical and chemical properties of drugs, their various dosage forms and subsequent biological effects.
609. Institutional Pharmacy (5). Lec. 4, Lab. 3. Pr., PY 401 and consent of instructor. Comprehensive presentation of the development, responsibilities, classification, organization and administration of the pharmacy in hospitals, nursing homes, etc., from the viewpoint of the administrative pharmacist. The responsibilities of the director of pharmacy service in a hospital. Field trips taken and a term project on a current aspect of Institutional Pharmacy is required.
680. Graduate Seminar (1). Pr., admission to Graduate School. Required of all pharmacy graduate students each quarter.
695. Special Problems (2-5 hours). Pr., consent of instructor. May repeat for a maximum of 8 hours.

Pharmaceutical Chemistry

201. Inorganic Pharmaceutical Chemistry (5). Pr., CH 105, 206. Inorganic chemicals; their manufacture, chemical properties, pharmaceutical and therapeutic uses, doses and preparations. Tests for identity and purity, together with assay methods are considered.
203. Organic Pharmaceutical Chemistry (5). Pr., PY 201, CH 207-208. Organic chemicals; their manufacture, chemical properties, trade names, pharmaceutical and therapeutic uses, doses and preparations.
302. Organic Pharmaceutical Chemistry (5). Pr., PY 203. Continuation of PY 203.
305. Pharmaceutical Assay (3). Lec. 1, Lab. 6. Pr., CH 206, CH 208. Pharmaceutical assay procedures not covered in general quantitative analysis, physical and chemical constants of fatty oils, proximate assay of vegetable drugs, official arsenic test, alcohol determination and the assay of alkaloidal drugs.

404. Chemistry of Natural Products (5). Pr., CH 301 and junior standing. Chemistry and nomenclature of fatty oils, volatile oils, steroids, glycosides, alkaloids, antibiotics, vitamins, and other natural products.
421. Advanced Inorganic Pharmaceutical Chemistry (5). Pr., PY 201 and junior standing. Modern structural concepts of atomic and molecular theory, and reaction mechanisms of inorganic chemicals of medicinal importance.

COURSES FOR GRADUATE STUDENTS

- 620-21-22. Chemistry of Synthetic Drugs (5-5-5). Pr., PY 302 or consent of instructor. Historical background, pertinent literature, organic name reactions, nomenclature, relation of chemical structure and physical properties to biological activity, isosterism, metabolite antagonism, enzyme inhibition, an exhaustive consideration of the chemistry and biological activity of the various therapeutic classes.
- 623-24-25. Synthesis of Drugs (5-5-5). Lec. 2, Lab. 9. Coreq., PY 620-21-22 or consent of instructor. Laboratory procedures in the synthesis of intermediates and representative compounds studied in PY 620-21-22.
- 626-27. Analytical and Control Methods (5-5). Lec. 3, Lab. 6. Pr., PY 305 or consent of instructor. The principles and techniques of analysis as applied to the various therapeutic classes.
628. Steroid Chemistry (5). Pr., PY 620 or consent of instructor. Structure determination, chemistry, synthesis and structure relationships of steroids of pharmacological and pharmaceutical importance.
629. Alkaloid Chemistry (5). Pr., PY 620 or consent of instructor. Structure determination, chemistry and synthesis of alkaloids with emphasis on the alkaloids of pharmacological and pharmaceutical importance.
660. Heterocyclic Medicinal Chemistry (5). Pr., consent of instructor. The chemical nature and behavior of heterocyclic moieties which are either themselves of medicinal significance or are components possessing therapeutic properties.

Pharmacology-Toxicology

309. Pharmacology I (5). Lec. 4, Lab. 3. Pr., ZY 101-102. Essentials of anatomy and physiology as a basis for pharmacodynamics with emphasis on the nervous and cardio-vascular systems.
403. Toxicology (5). Pr., PY 309, CH 208 and junior standing. Fundamentals of the isolation, identification, symptoms and treatment of the more common poisons.
405. Pharmacology II (5). Lec. 4, Lab. 3. Pr., PY 309 or equivalent, CH 301 and junior standing. Absorption and fate, mechanism of action, pharmaco-chemical relationships and toxicology of the official and more important non-official drugs, with a brief coverage of pathological conditions which indicate specific uses in therapy.
406. Pharmacology III (5). Lec. 4, Lab. 3. Pr., PY 405 and junior standing. Continuation of PY 405. Topics will be selected from vitamins, hormones, biologicals and antibiotics with major emphasis on endocrine products and deficiency states as related to specific therapy.
407. Chemotherapeutic Drugs (5). Pr., PY 309. Structure, action relationship of drugs and their use in inhibiting or destroying microorganisms.
428. Public Health (5). Pr., VM 200, VM 204 or VM 311 and junior standing. Common communicable diseases including the course and symptoms of the disease, the causative agents, mode of transmission, and control measures including hygienic and sanitation measures as well as immunization procedures. A survey of federal and state health agency activities is included.
429. Biochemical Pharmacology (3). Lec. 1, Lab. 6. Pr., CH 301 and junior standing. Application of biochemical principles and techniques in the study of mechanisms of drug action.
430. Pharmacological Techniques (5). Lec. 4, Lab. 3. Pr., PY 309 and junior standing. Principles and techniques of surgical procedures used in drug testing with animals, including preparation of the animal, asepsis, and care of surgical instruments.
431. Cellular Pharmacology (5). Lec. 4, Lab. 3. Pr., PY 405-6, junior standing. Cytological basis of pharmacodynamics including metabolic energy transformation, protein synthesis, and cellular control systems as related to drug actions.

432. Fundamentals of Bionucleonics (3). Lec. 2, Lab. 3. Pr., PS 206 or consent of instructor and junior standing.
Theoretical and practical application of trace level radioactivity for research, application to pharmacy and allied sciences.

COURSES FOR GRADUATE STUDENTS

630. Toxicological Methods (3). Lec. 1, Lab. 6. Pr., PY 403, or equivalent.
Techniques applied to the separation and chemical identification of the more common volatile, non-volatile organic and metallic poisons.
- 631-632. Psychopharmacology (5-5). Lec. 4, Lab. 3—Lec. 3, Lab. 6. Pr., 431 for 631 and PG 320 or PG 445 for 632.
Effect of neurotropic and psychotropic agents upon reverberatory circuits, chemical transmitters, neural amines, and metabolic energy systems; measures of rate of behavioral change; critique of behavioral screening techniques.
633. Bioassay (5). Lec. 3, Lab. 6. Pr., PY 430, MH 127 or an equivalent course in statistics.
Statistical basis for design of experiments and analysis of data in pharmacological quantitation.
637. Pharmacology Seminar (3). Pr., PY 430.
638. Toxicology Seminar (1-3). Pr., graduate standing.
Students are expected to present reviews of current literature and case histories. This will be followed with discussion by students and faculty.
- 650-651. Advanced Toxicology (5-5). Lec. 3, Lab. 6. Pr., PY 630 or equivalent.
The mechanism of action of poisons and antidotes, lethal doses, and methods of detection and quantitation of poisons in tissues and body fluids. Practical application of analytic procedures stressing modern instrumentation for the micro and semimicro detection and estimation of poisons in post-mortem and clinical specimens. The student will participate in a minimum of four post-mortem examinations with instructions in proper technique to obtaining specimens for toxicological analyses.
652. Forensic Toxicology (3). Pr., consent of instructor.
This course embraces a summary of medical jurisprudence including the laws governing the practice of forensic toxicology in criminal and civil prosecution. Collection, preservation and chain of evidence, and testimony in courts are stressed.

Pharmacognosy

306. Pharmacognosy I (5). Lec. 4, Lab. 3. Pr., ZY 102, BY 205, and CH 207.
Plant and animal drugs studied from a basic biological standpoint, including classification (taxonomy), morphology, histology, microscopy, biogeography, and related features.
307. Pharmacognosy II (5). Lec. 4, Lab. 3. Pr., CH 301, PY 306.
Biochemical presentation of drugs of natural origin including morphology, histology, mode of production, medicinally active constituents, assays, and applications.
440. Histology of Natural Products (3). Lec. 2, Lab. 4. Pr., consent of instructor and junior standing.
Micro-chemical, micro-analytical, and micro-sectioning techniques, including methods of fixation, dehydration, embedding, and staining tissues in the preparation of permanent mounts of microslides, with use of microtome and micro-dissection techniques.
441. Commercial Pharmacognosy (3). Pr., consent of instructor.
Commercial aspects of crude drugs, both wild and cultivated, foreign and domestic; composition and application of pesticides.

COURSES PRIMARY FOR GRADUATE STUDENTS

640. Advanced Pharmacognosy (5). Lec. 3, Lab. 6. Pr., PY 307 or equivalent.
Comprehensive study of both official and unofficial crude drugs conducted macroscopically and microscopically; techniques of use of camera lucida, microtome, and microphotographic equipment; pharmacognosy of previously undescribed drugs.
641. Advanced Microanalysis (5). Lec. 3, Lab. 6. Pr., permission of instructor.
Methods of microscopy and microchemistry of natural materials and compounds.
642. Histology of Medicinal Plants (5). Lec. 3, Lab. 6. Pr., PY 440.
Microscopic structure of medicinal plants in fresh or preserved state as related to the origin and fate of plant compounds.
699. Research and Thesis (5).

Pharmacy Administration

204. Drug Marketing (3). Pr., EC 200, PY 101.
Basic principles of marketing drug products from the manufacturer to the consumer.

- 408. Pharmaceutical Economics (5).** Pr., EC 200, EC 211, PY 204.
 Elements of drug store management; drug store layout, buying, sales production, salesmanship, merchandising, and other affiliated considerations in the successful operation of a retail pharmacy.
- 415. Pharmaceutical Jurisprudence (3).** Pr., fifth year standing.
 Legal aspects of pharmaceutical practice, giving primary consideration to State and Federal regulations bearing thereon.

Philosophy (PA)

Acting Head Professor D. B. McKown

Assistant Professors Andelson, Brown, Davis, and Walters

Instructor Snyder

- 202. Ethics and Society (5).**
 Human values as expressed in customs, institutions, politics, and philosophies of principal world civilizations. Ethics in this sense shown as grounded in and influencing the total culture of a people.
- 301. Introduction to Philosophy (3). General elective.**
 The basic philosophical problems underlying western civilization.
- 302. Introduction to Ethics (3). General elective.**
 The general principles of morality and human conduct.
- 307. Scientific Reasoning (5).**
 Principles of logical reasoning used by scientists and others. (Not open to students with credit in PA 308.)
- 308. Introduction to Logic (3). General elective.**
 Principles of logical thinking with emphasis upon a functional application of these principles.
- 310. Eastern Religious Thought (3). General elective.**
 Readings from primary and secondary sources related to Hinduism, Jainism, Buddhism, Taoism, Confucianism, Shintoism, and Sikhism.
- 315. Western Religious Thought (3). General elective.**
 Readings from primary and secondary sources related to Ancient Egyptian, Mesopotamian, and Greek religions, Judaism, Zoroastrianism, Christianity, and Islam.
- 325. Aesthetics (5).**
 The history of the aesthetic theory for determining foundations of critical reflection on the arts of literature, drama, painting, sculpture, architecture, and music.
- 330. Philosophy of Religion (5).**
 Religious ideas including the origin of religion; the nature of religion; the various concepts of God, the soul, immortality; and internal and external criticisms of religion.
- 400. Philosophy of Science (5).** Pr., junior standing.
 Implications for human values of some important concepts and methods in the social and natural sciences.
- 401. The Philosophy of Communism (5).** Pr., junior standing.
 The theory, practice, and social motivation of Marxism, but with some additional studies in peripheral areas.
- 402. Existentialism (5).** Pr., junior standing.
 Examines a type of philosophy which approaches the problem of being through a careful analysis of the basic structures of human existence.
- 403. Symbolic Logic (5).** Pr., junior standing.
 Extended treatment of symbolic logic. (PA 308 is desirable but not necessary for this course.)
- 404. Modern Ethical Theories (5).** Pr., junior standing.
 Problems and methods in contemporary moral philosophy.
- 410. Ancient and Medieval Philosophy (5).** Pr., junior standing.
 Philosophical thought of ancient Greece and Rome, and of medieval Christendom.
- 420. Modern Philosophy (5).** Pr., junior standing.
 Philosophical thought from Descartes through Kant.
- 425. Nineteenth Century Philosophy (5).** Pr., junior standing.
 Philosophical thought in Germany, England, and France from 1800-1900.
- 430. Contemporary Philosophy (5).** Pr., junior standing.
 Philosophical thought from James through the present time.
- 440. American Philosophy (5).** Pr., junior standing.
 American philosophical thought from colonial times to William James.

455. Metaphysics (5). Pr., two courses in Philosophy and junior standing. The major theories of the ultimate nature of reality.
460. Epistemology (5). Pr., two courses in Philosophy and junior standing. The origin, nature, kinds, and validity of knowledge, with a consideration of faith, intuition, belief, opinion, certainty, and probability.
470. Plato (5). Pr., junior standing. Plato's major works together with a survey of his other productions.
475. Aristotle (5). Pr., junior standing. Aristotle's philosophy with special emphasis on epistemology, metaphysics, ethics, and psychology. His relation to his predecessors and his central role in western thought are also examined.
650. Seminar (5). Pr., graduate standing and permission of instructor. Content will change each quarter in a calendar year, varying from movements of thought to intensive study of one of the great thinkers such as Plato or Whitehead.

Physics (PS)

Head Professor Carr

Professors Alford and Hughes

Alumni Associate Research Professor Fromhold

Associate Research Professor Budenstein

Associate Professors Andrews, Askew, French, Kinzer, Latimer, Mowat, and Sparks

Assistant Professors Harlan, Thaxton, Ward, and Wise

Assistant Professor and Research Associate Garmon

Instructors Horton and Forsythe

201. General Physics I (5). Lec. 4, Lab. 3. Pr., MH 163 (or concurrently). The first three quarters in a basic physics course comprising PS 201-202-203. Mechanics, sound, heat, electricity, magnetism, and light are emphasized. For students in chemistry, engineering, physics and applied physics.
202. General Physics II (5). Lec. 4, Lab. 3. Pr., PS 201; MH 264 (or concurrently).
203. General Physics III (5). Lec. 4, Lab. 3. Pr., PS 202; MH 264.
204. Foundations of Physics (5). Credit in PS 201 and 205 excludes credit for this course. The basic principles of mechanics, heat, light, sound, electricity and magnetism and selected topics. For students in aeronautical administration, agricultural and industrial arts education, industrial design, and home economics.
205. Introductory Physics—Mechanics, Heat and Sound (5). Lec. 4, Lab. 3. Pr., MH 122 or 160. The first half of a two-quarter course in the fundamentals of physics. The quantitative as well as the qualitative aspects of the subject are stressed. For students in architecture, forestry, laboratory technology, pharmacy, pre-dentistry, pre-medicine, pre-veterinary medicine, industrial management, and science and literature. The weekly three-hour laboratory periods are devoted to the performance of appropriate experiments.
206. Introductory Physics—Electricity and Light (5). Lec. 4, Lab. 3. Pr., PS 205. Continuation of PS 205.
210. Pre-Medical Physics (5). Lec. 4, Lab. 3. Pr., PS 206. Introduction to modern physics, including atomic structure, nuclear physics, x-rays, and special relativity.
217. Astronomy (3). General elective. Descriptive astronomy, accompanied by occasional observations of the heavenly bodies with a three-inch refracting telescope.
301. Intermediate Electricity and Magnetism (5). Lec. 4, Lab. 3. Pr., PS 203, MH 361. Phenomenological development of classical electricity and magnetism leading to the formation of Maxwell's equations. Topics include: laws of Coulomb, Gauss, Ampere, and Faraday; properties of dielectric and magnetic media, AC circuit theory, Maxwell's displacement current, and an introduction to plane waves.
302. Electronics (5). Lec. 4, Lab. 3. Pr., PS 203, MH 264. Review of AC and DC circuits; theory of vacuum tubes and semiconductors; diodes as rectifiers and regulators; tube and transistor voltage and power amplifiers; feedback amplifiers and oscillators; pulse and digital circuits. Appropriate laboratory exercises form a part of the course.

- 303. Optics (5). Lec. 4, Lab. 3. Pr., PS 202, MH 264.** Intermediate course in physical optics comprising wave motion, reflection, refraction, dispersion, origin of spectra, interference, diffraction, and polarization, with appropriate laboratory experiments.
- 304. Applied Spectroscopy (5). Lec. 4, Lab. 3. Pr., PS 203, MH 163.** The more important concepts of the origin of spectra; a study of instruments and techniques of practical spectroscopy. Laboratory experiments designed to give students in both Chemistry and Physics a working knowledge of spectroscopy as a tool.
- 305. Introduction to Modern Physics (5). Lec. 4, Lab. 3. Pr., PS 203, MH 264.** Selected topics of modern physics, including atomic structure, nuclear structure, wave-particle dualism, and special relativity.
- 330. Fundamentals of Physics (10).** Demonstration lecture 3, lecture-recitation 7, laboratory 4, seminar 1. Pr., MH 160 (or concurrently). Offered Summer only by special arrangement.
An introductory course in physics using PSSC materials in which the fundamental principles of optics, mechanics, electricity and magnetism are stressed. For secondary school physics teachers with a limited background in physics who are enrolled in the Physics Summer Institute.
- 401. Theoretical Physics I—Mechanics (5). Lec. 4, Prob. 2. Pr., junior standing, PS 203, MH 361.** Newton's laws; systems of particles; conservation laws; free, damped, and forced oscillations; introduction to calculus of variations.
- 402. Theoretical Physics II—Mechanics Continued (5). Lec. 4, Prob. 2. Pr., junior standing, PS 401.** Calculus of variations; Hamilton's Principle and LaGrange's equations; vibrating systems; vector analysis; dynamics of rigid bodies.
- 403. Theoretical Physics III (5). Lec. 4, Prob. 2. Pr., 301, PS 402, junior standing.** Introduction to electromagnetic theory using the mathematics of vector fields. The physical interpretation of the different fields is stressed.
- 404. Thermodynamics (5). Pr., junior standing, PS 305, MH 362.** Equations of state. First and second laws of thermodynamics. The absolute temperature scale; the entropy, free energy, and Gibbs potential; general conditions of equilibrium. Application to reactions in gases and dilute solutions. Nernst's postulate.
- 405. Nuclear Physics (5). Lec. 4, Lab. 3. Pr., junior standing, PS 305, MH 264.** Nuclear radiations; transmutations; natural and artificial radioactivity; binding energy; nuclear forces; structure of the nucleus; nuclear fission and its applications. Appropriate laboratory experiments form a part of the course.
- 406. Advanced Laboratory I (2). Lab. 6. Pr., PS 301, 302, 305, junior standing.** Research oriented experiments will be selected in the areas of biophysics, plasmas, low temperature, high vacuum, wave propagation, nuclear and atomic spectroscopy, Mossbauer effect, nuclear magnetic resonance, transport in solids, Hall effect, mass spectrometry, advanced electronics, and other areas of current interest in research.
- 407. Advanced Laboratory II (2). Lab. 6. Pr., PS 406.** A continuation of PS 406.
- 408. Advanced Laboratory III (2). Lab. 6. Pr., PS 407.** A continuation of PS 407.
- 409. Introduction to Reactor Physics I (5). Lec. 4, Lab. 3. Pr., junior standing, PS 305, PS 405, MH 362, or permission of instructor.** Brief account of nuclear physics; basic instrumentation; interaction of neutrons with matter; chain reactions; neutron diffusion; the bare homogeneous thermal reactor; lattice constants; reactor kinetics.
- 410. Introduction to Reactor Physics II (5). Lec. 4, Lab. 3. Pr., junior standing, PS 409.** Homogeneous reactor with reflector; reactor control; power reactors; thermal aspects of reactor systems; design variables; radiation detection and measurement; shielding; radiation hazards.
- 412. Seminar in Modern Physics (1). Pr., senior standing.** Library search, written reports, and oral presentation of a pertinent topic in modern physics.
- 413. Introduction to X-ray Crystallography (5). Lec. 4, Lab. 3. Pr., junior standing, PS 305, or permission of instructor.** Principles of crystallography, properties of x-rays, Laue and powder techniques, applications to crystal structure and grain size.
- 414. Electron Optics and Microscopy (5). Lec. 3, Lab. 6. Pr., junior standing and PS 203 and MH 264.** Electron optics; theory and operation of the electron microscope; techniques of mounting, replication and shadowing of specimen; electron diffraction, theory and interpretation of patterns.

415. Introduction to Quantum Mechanics (5). Pr., junior standing and PS 203, MH 361.
The principles of quantum mechanics stressing the physical interpretation of the theory with applications to certain selected phenomena of modern physics.
417. Introduction to Biophysics (5). Pr., permission of the instructor, junior standing. Survey of the physics of biological systems, with emphasis on the cellular and subcellular levels; effects of light and high energy radiations, bio-electric phenomena, bio-energetics, etc.
421. Modern Electronics (5). Lec. 3, Lab. 6. Pr., PS 302 and junior standing. Network theory and digital logic; state-of-the-art electronic devices; operational amplifiers; linear and digital integrated circuits; servo systems; selected topics in modern instrumentation.
430. Physics for High School Teachers I (4). Lec. 3, Lab. 3. Pr., PS 204 or equivalent, junior standing. Fundamental laws in mechanics, heat, and sound with particular emphasis upon such broad principles as Newton's laws of motion, the conservation of energy and momentum, and the transfer of energy.
431. Physics for High School Teachers II (4). Lec. 3, Lab. 3. Pr., PS 430, junior standing. Fundamental laws in light, electricity, magnetism, and an introduction to some basic phenomena in atomic, molecular, and nuclear physics.
435. Introduction to Solid State Physics (5). Pr., MH 361, junior standing. Survey of solid state phenomena including lattice vibrations, band description of electronic states in metals, semiconductors and insulators, and magnetic phenomena.
470. Health Physics (5). Lec. 4, Lab. 3. Pr., permission of the instructor, junior standing. Fundamental principles of radioactivity; instrumentation for detecting and monitoring radioactive nuclides; radiation effects on man; permissible radiation dosages; safe handling of radioactive substances; and shielding from various radiations.

GRADUATE COURSES

601. Advanced Dynamics I (3). Pr., PS 402.
D'Alembert's principle; introduction to the calculus of variation; Hamilton's principle and Hamilton's equations; principle of least action.
602. Advanced Dynamics II (3). Pr., PS 601.
Canonical variables and contact transformations; the Hamilton-Jacobi equation; action; angle variables; Poisson brackets; continuous systems.
603. Mechanics of Continuous Media (3). Pr., PS 602.
Introduction to theories of elasticity and fluids.
- 604-5-6. Theory of Electricity and Magnetism I-II-III (3-3-3). Pr., PS 403, Coreq., MH 607-8-9.
Maxwell's formulation of classical electromagnetic theory. Includes electrostatics, magnetostatics, potential problems, electric currents, Maxwell's equations, electromagnetic waves, radiation theory, boundary value problems.
607. Physical Optics (3). Pr., PS 606.
Application of Maxwell's equations to optical phenomena including Kirchoff's formulation, propagation of electromagnetic waves in anisotropic media, double refraction, dispersion.
611. Plasma Physics I (3). Pr., PS 301, PS 402, or permission of instructor.
Orbit theory, fluid model, Alfvén waves, plasma stability, and plasma radiations.
612. Plasma Physics II (3). Pr., PS 611 or permission of instructor.
Theory of plasma waves, shocks, instabilities, and magneto-hydrodynamics.
617. Modern Physics I (3). Pr., PS 305, MH 404, or permission of instructor.
Special theory of relativity; quantum mechanics with applications.
618. Modern Physics II (3). Pr., PS 617 or PS 641, or permission of instructor.
Atomic and molecular spectra; quantum statistics; band theory of solids; x-rays.
619. Modern Physics III (3). Pr., PS 617 or PS 641, or permission of instructor.
Nuclear physics, particles.
628. Statistical Mechanics I (3). Pr., PS 404, 601.
Statistical ensembles in classical mechanics, the Maxwell-Boltzmann distribution law. Boltzmann's H theorem, and an introduction to quantum statistical mechanics.
629. Statistical Mechanics II (3). Pr., PS 628.
Quantum mechanical H-theorem, applications, introduction to non-equilibrium statistical mechanics.
630. Modern Physics for High School Teachers (5). Lec. 4, Lab. 3. Pr., junior standing, PS 431 or equivalent, MH 487 or equivalent.
Survey of physics since 1890 including: structure of matter; atomic and molecular spectra; x-rays, natural and induced radioactivity; nuclear fission and fusion; and cosmic rays.

- 632. Special Theory of Relativity (3).** Pr., PS 602, PS 605.
Relativistic mechanics, covariant formulation of Maxwell's field equations, Lagrangian and Hamiltonian formulation of fields.
- 635. Solid State Physics I (3).** Pr., PS 435, PS 643.
Electrons in a perfect crystal lattice, quantum mechanical formulations of the many body problem, molecular bonding, description of the symmetry properties of solids.
- 636. Solid State Physics II (3).** Pr., PS 635.
Brillouin Zones, cohesive energy, interaction of electrons with electromagnetic radiation interactions between electrons and the crystal lattice.
- 637. Solid State Physics III (3).** Pr., PS 636.
Magnetic properties of solids; para-, dia-, ferro-, and antiferromagnetic effects. Resonance experiments, optical properties of solids.
- 639. Directed Reading in Physics (2).** Pr., permission of instructor. (May be taken more than one quarter.)
- 641. Quantum Mechanics I (3).** Pr., PS 402.
Action principle; Schrödinger's equation; operator formalism; bound state problems; angular momentum.
- 642. Quantum Mechanics II (3).** Pr., PS 641.
Transformation theory; perturbation calculations; particle in electromagnetic field; radiative transitions.
- 643. Quantum Mechanics III (3).** Pr., PS 642.
Scattering theory; S matrix; identical particles; applications.
- 644-5. Advanced Quantum Mechanics I-II (3-3).** Pr., PS 632, or PS 643.
Dirac electron; field quantization; interactions; Feynmann diagrams; dispersion relations.
- 653. Seminar in Physics (2).** Pr., permission of instructor. (May be taken more than one quarter.)
- 655. Special Topics in Theoretical Physics (3).** Pr., permission of instructor.
Choice of topic will vary but will include: relativity theory; group theory; atomic and molecular structure; elasticity; fluid mechanics; quantum field theory; low temperature physics. (May be taken more than one quarter.)
- 661. Nuclear Structure (3).** Pr., PS 405, PS 643.
Selected topics on properties of nuclei.
- 662. Nuclear Processes (3).** Pr., PS 661.
Radioactive decay, nuclear reactions.
- 691. Directed Reading in Contemporary Physics.** (Credit to be arranged.) Pr., completion of 30 hours of advanced courses in physics. (May be taken more than one quarter.)
- 699. Research and Thesis.** (Credit to be arranged.)
- 799. Research and Dissertation.** (Credit to be arranged.)

Political Science (PO)

*Head Professor Fortenberry
Associate Professors Johnson and Nayar*
Assistant Professors McNorton and Metzger
Instructor Pickering*

- 206. United States Government (5).** Pr., sophomore standing. (Credit in PO 209 excludes credit for this course.)
National, state, and local government.
- 209. National Government (5).** Pr., sophomore standing. (Credit in PO 206 excludes credit for this course.)
The nature, theory and practice of national government in the United States.
- 210. State Government (5).** Pr., sophomore standing.
The nature, theory and practice of state and municipal government of the United States with emphasis on Alabama government.
- 309. Introduction to International Relations (5).** Pr., sophomore standing.
International relations, including a consideration of the bases of national power and the rudiments of international politics.
- 311. International Organization (5).** Pr., sophomore standing.
The evolution of international organization from the beginning through the United Nations.

* Visiting Associate Professor, 1967-68.

312. **An Introduction to Comparative Government (5).** Pr., sophomore standing. Methods of classifying governments by institutional and developmental characteristics. A review of the forces which create political stability and instability; democracy and dictatorship, contemporary political systems in selected countries will be used for comparison.
313. **The Governments of Latin American Republics (5).** Pr., sophomore standing. The functioning of the political systems in the twenty Latin American Republics with emphasis upon the dynamic factors which determine how they operate.
317. **Regional Foreign Policy (5).** Pr., sophomore standing. The foreign policies and relations between the countries of the region with special emphasis on the relations of these countries with the rest of the world.
319. **Soviet Foreign Policy (5).** Pr., sophomore standing. The factors affecting Soviet foreign policy decision making with special emphasis on (1) theory and practice of world communism, and, (2) the techniques of Soviet penetration in foreign areas.
323. **Municipal Government in the United States (5).** Pr., sophomore standing. Functions of city government, relation of city to state; electorate, party system and popular control; forms of government; administrative organization; some reference to Alabama.
325. **Introduction to Public Administration (5).** Pr., sophomore standing. Study of organization, development, procedures, process, and human factors involved in administration in a political environment.
327. **Policy and Administration (5).** Pr., sophomore standing. Resources in the American economy; consideration of constitutional, political and geographic factors in the development of resources; policy; organization, procedures, and programs for administration and development of natural resources.
329. **The Executive (5).** Pr., sophomore standing. The American presidency and state governorships with a view toward analyzing the political dynamics of chief executives and their relationships to the competitive branches and units of government within the American political system.
331. **The Legislative Process (5).** Pr., PO 206 or 209 or 210 and sophomore standing. The principles, procedures, and problems of lawmaking in the United States; special attention to Congress and the state legislatures.
332. **The Judicial Process (5).** Pr., sophomore standing. The role of the courts, the nature of jurisprudence; comparative legal systems; the origin of law; and the concept of legality.
340. **Political Parties and Politics (5).** Pr., sophomore standing. The nature, organization, and operation of political parties in the United States; the suffrage; nominating and electoral processes; importance and nature of interest groups.
401. **American Constitutional Law I (5).** Pr., junior standing. The Constitution of the United States on the basis of the decisions and opinions of the Supreme Court defining the judicial review, the relationship of the executive, legislative, and judicial branches of the national government, and the federal system.
402. **American Constitutional Law II (5).** Pr., junior standing. The Constitution of the United States on the basis of the leading decisions and opinions of the Supreme Court defining civil rights in relation to both national and state governments.
405. **Metropolitan Area Governmental Problems (5).** Pr., junior standing. Political, governmental, and administrative organization and actions in urban areas with many governmental entities; governmental problems resulting from urbanization and possible solutions.
407. **Political Science (5).** Pr., PO 206 or 209 and junior standing. The nature, scope, and methods of political science; the origin, forms, and functions of the state, with special emphasis on the development of political theory.
415. **Public Personnel Administration (5).** Pr., junior standing. Personnel policies and processes of national, state and local governments. The role of politics in public personnel management.
418. **Administrative Law (5).** Pr., junior standing. General nature of administrative law; types of administrative action and enforcement; analysis of rule-making and adjudication; administrative due process; judicial review. Case method.
419. **Southern Politics (5).** PO 206 or PO 209 and 210 and junior standing. Regional politics emphasizing case studies, voting patterns, political strategy, current political groups and factionalism, taught from the viewpoint of political science rather than history.
420. **Political Thought Before the Nineteenth Century (5).** Pr., junior standing. A study of the development of political thought from the Greeks to 1800; attention to the philosophers and the early theories that are found in modern political institutions.

422. **Recent and Contemporary Political Theory (5).** Pr., junior standing. The political theories of the nineteenth and twentieth centuries; analysis and comparison of modern ideologies.
424. **American Political Thought (5).** Pr., junior standing. The principal American political philosophers and philosophies and their influence on political institutions.
426. **Governments of Europe (5).** Pr., junior standing. Governments, political structure and power systems with particular emphasis upon Great Britain and Soviet Russia, and consideration of France, Germany and Italy.
430. **American Foreign Policy (5).** Pr., junior standing. An analysis of American foreign policy decision making and practices with special emphasis on (1) recent and contemporary trends and developments and (2) the economic aspects of international politics.
435. **Contemporary International Politics (5).** Pr., junior standing. A survey of the conflicts of national interests in contemporary international politics with special emphasis on the efforts to resolve these issues through diplomacy. This course will give students the opportunity to apply their academic training to an analysis of actual contemporary international issues.
440. **Introduction to International Law (5).** Pr., junior standing. The origin and development of international law with special emphasis on recent and current developments—trends.
445. **The Government and Politics of the Developing Nations (5).** Pr., junior standing. The problems involved in creating stable political systems in underdeveloped and recently colonial countries. Selected countries of this type will be used for comparison.

GRADUATE COURSES

611. **Seminar in American Government (5).** A systematic examination of functions, problems, and issues within the political and constitutional framework of selected areas of American government.
613. **Seminar in State and Local Government (5).** A systematic examination of functions, problems, and issues within the political and constitutional framework of selected areas of state and local government. Some attention will be given to Alabama.
625. **Seminar in Political Parties, Pressure Groups and Political Issues in the United States (5).** Pr., junior standing. The interaction of political parties, pressure groups and the general public as a determinant in resolving political issues.
635. **Seminar in Public Administration (5).** Various processes, functions, theories, practices and systems as treated in the literature of public administration.
645. **Seminar in Comparative Government (5).** The major institutions, functions, and problems of representative political systems. Includes the methodology and bibliography of comparative government and politics.
655. **Seminar in International Relations (5).** The basic literature of the field of International Relations with special emphasis on the critical evaluation of this material.
665. **Seminar in Political Theory (5).** The problems of scope and methods of inquiry in the fields of political theory with intensive research in selected topics.
675. **Seminar in Constitutional Law (5).** Selected areas of constitutional law with readings in depth in relevant cases and constitutional theory.

Poultry Science (PH)

*Professors Moore, Cottier, Edgar, and Mora
Associate Professors Goodman and Johnson*

301. **General Poultry Husbandry (5).** Lec. 4, Lab. 2. Fall, Winter, Spring, Summer. Principles of poultry production and their application to general farm conditions, including breeding, feeding, housing, diseases, and culling.
302. **Poultry Meat Production (3).** Lec. 2, Lab. 2. Fall. Pr., PH 301. Practical problems involved in raising broilers, capons, and turkeys for meat production.
404. **Poultry Management (5).** Lec. 4, Lab. 2. Spring. Pr., PH 301 and junior standing. Poultry problems and management of commercial flocks.

405. **Poultry Feeding (3).** Fall. Pr., PH 301 and junior standing. Composition and use of poultry feeds in connection with the demands for growth, body maintenance, and egg production.
406. **Incubation and Brooding (3).** Lec. 2, Lab. 2. Winter. Pr., PH 301 and junior standing. Embryology of the chick, theory and practice of incubation and brooding.
- 407-09. **Poultry Problems (3-3).** Lec. 1, Lab. 4. Pr., 12 hours PH courses and junior standing. All quarters. Investigation on some phase of poultry work.
408. **Poultry Diseases and Parasites (5).** Lec. 4, Lab. 2. Winter. Pr., PH 301 and junior standing. Prevention, diagnosis, control, and treatment of the common diseases and parasites of poultry, designed especially for Agriculture students.
410. **Poultry Breeding (3).** Lec. 3. Spring. Pr., PH 301, ZY 300, and junior standing. Physiology of reproduction and inheritance of various poultry characters responsible for efficient egg and meat production and low mortality.
411. **Poultry Marketing (3).** Lec. 2, Lab. 2. Spring. Pr., PH 301 and junior standing. Grading eggs and poultry and study of problems of poultry marketing.
412. **Commercial Poultry Management (3).** Lec. 4. Pr., graduate standing. Management practices and principles used in the business of producing market eggs, hatching eggs, broilers, and turkeys. (Credit for both PH 404 and PH 412 may not be used in meeting the requirements for the Master's degree.)
413. **Poultry Sanitation and Diseases (3).** Lec. 4. Pr., graduate standing. Recommended sanitation practices and the prevention and control of common diseases and parasites of poultry. (Credit for both PH 408 and PH 413 may not be used in meeting requirements for the Master's degree.)
414. **Environmental Physiology and Bioengineering (5).** Lec. 3, Lab. 4. Winter. Pr., ZY 424 or AN 302 or equivalent; senior standing; and consent of instructors. (This is the same course as AN 414.) Practices and theories of environmental engineering and science directly applicable to animal environments. Physiological responses of animals to various environmental parameters.
422. **Avian Diseases (5).** Lec. 4, Lab. 2. Fall. Diagnosis, treatment, and prevention of infectious and parasitic diseases. Clinical and autopsy demonstrations are performed during laboratory periods. (For Veterinary students only.)

GRADUATE COURSES

604. **Advanced Poultry Production (5).** Lec. 5. Spring. Advanced studies on various phases of poultry production.
606. **Advanced Poultry Breeding (5).** Lec. 4, Lab. 2. Fall. Advanced studies of the principles of heredity as applied to poultry breeding.
607. **Advanced Poultry Problems (2 to 5).** All quarters. (May be taken more than once to a maximum of 5 hrs.) Assigned problems.
608. **Seminar.** Credit to be arranged. Fall, Spring, Winter, Summer. Literature in Poultry Husbandry and other fields related to poultry. Emphasis will be given to the preparation, organization and presentation of research material by students and to reporting of current literature in the field. Designed for seniors in Poultry or Animal Husbandry as well as graduate students.
610. **Advanced Poultry Nutrition (5).** Lec. 5. Summer. Advanced study of the nutrients, their function and the nutritional requirements of poultry.
611. **Advanced Poultry Management (5).** Lec. 5. Summer. Advanced study of the principles of management of commercial poultry flocks.
612. **Advanced Poultry Diseases (5).** Lec. 1, Lab. 8. Spring. Pr., PH 408 or consent of instructor. Isolation, cultivation, and identification of bacterial, fungal, and viral agents. Emphasis on biochemical aspects of microbial and nutritional diseases and the mechanisms of the immune response.
613. **Advanced Poultry Diseases (5).** Lec. 1, Lab. 8. Summer. Pr., VM 418 and PH 612, or equivalent. Continuation of PH 612 with emphasis on those disease conditions caused by protozoa, helminths, and arthropods and the gross and histopathology of diseases studied in both quarters.

614. **Immunochemistry** (5). Lec. 3, Lab. 4. Fall. Pr., general bacteriology, immunology and organic or biochemistry.
Advanced study of the fundamental principles of immunology including specificity, antibody synthesis and the thermodynamics of antigen-antibody reactions. Laboratory will include the use of immunodiffusion, immunoelectrophoresis, fluorescent-antibody technique and quantitation of the precipitin reaction.
615. **Avian Physiology** (5). Fall. Pr., ZY 424 and organic chemistry.
General physiology of birds with particular reference to domesticated species.
618. **Experimental Virology** (5). Lec. 3, Lab. 4. Winter. Pr., VM 461, VM 495, CH 208, CH 420 or equivalent and permission of instructor.
Advanced study of fundamental properties of plant, animal and bacterial viruses including biochemical and biophysical properties and mechanisms of infection. Laboratory includes isolation, purification and fractionation of viruses; identification of anti-viral agents using in vitro systems.
625. **Digestive and Renal Physiology** (5). Spring. Pr., ZY 424 and organic chemistry.
Review of the digestive and renal physiology of mammalian and avian species with special reference to body fluid homeostasis.
699. **Research and Thesis.** (Credit to be arranged.) All quarters.
Technical laboratory problems related to poultry.
799. **Doctoral Research and Dissertation.** (Credit to be arranged.) All quarters.

Pre-Engineering (PN)

Head Professor H. Strong

101. **History of Engineering** (1).
102. **Introduction to the Engineering Profession** (1). Pr., PN 101.
103. **Engineering Methods** (1). Pr., PN 102.
Use of analysis, experiment, and synthesis in the solution of engineering problems.

Psychology (PG)

Head Professor Spears

Professors Jenkins and McIntyre

Associate Professors Foshee, Irvine, Lair, Moon, and Turner

Assistant Professors Cahoon, Smith, Vallery, and Williams

Research Lecturer McKee

211. **Introduction to Psychology I** (5).
Scientific study of human behavior emphasizing principles of learning, perception, and motivation.
212. **Introduction to Psychology II** (4). Pr., PG 211.
Continuation of PG 211 emphasizing the development of complex behavior from birth to maturity.
215. **Quantitative Methods in Psychology** (4). Pr., MH 161, PG 211.
Introduction to the measurement of behavior and to quantitative methods of data analysis.
311. **Behavior of Man** (3). General elective.
The science of behavior and a survey of the field of psychology. (Credit not allowed for both PG 211 and PG 311.)
320. **Experimental Psychology I: Learning** (4). Lec. 3, Lab. 3. Pr., PG 212, 215 (PG 215 may be taken concurrently).
Experimental analysis of behavior modification emphasizing problems, concepts, and methods.
321. **Experimental Psychology II: Perception** (4). Lec. 3, Lab. 3. Pr., PG 212, 215 (PG 215 may be taken concurrently).
Discrimination, generalization, and their physical and physiological correlates.
322. **Experimental Psychology III: Personality** (4). Lec. 3, Lab. 3. Pr., PG 320.
Motivation, cognitive processes, and adaptive behavior.
330. **Social Psychology** (4). Lec. 3, Lab. 2. Pr., PG 212 or SY 203.
Analysis of social behavior including roles, group identification, attitudes, and conflicts among these.
360. **Fields of Professional Psychology** (5).
Contributions of psychology to medicine, education, law, and human engineering in industry. Not open to students majoring in Psychology.

Advanced Undergraduate and Graduate

415. Psychological Testing (5). Pr., junior standing and PG 322, or departmental approval.
Theory of psychological testing with application to the measurement of aptitudes and various aspects of personality.
430. Perception (4). Pr., junior standing and PG 321, PG 322 or departmental approval.
Theories of perception, emphasizing both general and individual factors that influence meaning.
431. Social Psychology (5). Pr., 15 hours of psychology and junior standing.
Theories of social behavior; processes of social influence; group structure and dynamics; influence of basic psychological processes on social behavior.
433. Personality (4). Pr., junior standing and PG 322 or departmental approval.
Objective, phenomenological, and psychoanalytic theories of personality.
435. Behavior Pathology (4). Pr., junior standing and PG 433 or departmental approval.
Types of abnormal behavior and their social and biological origins.
440. Physiological Psychology (4). Pr., junior standing and 20 hours of biological sciences, or departmental approval.
Study of the physiological correlates of behavior, including sensory and response mechanisms, with special emphasis on central nervous system function.
445. Animal Behavior (4). Pr., junior standing and 20 hours of biological sciences, or departmental approval.
Analysis of unlearned and learned animal behavior and its evolutionary development, integrating the contributions of ethological and behavioristic research.
450. Learning (4). Pr., junior standing and PG 320 or departmental approval.
Theories of learning and their logical and empirical foundations.
461. Industrial Psychology (5). Pr., junior standing.
The uses of psychology in business and industry.
462. Training and Supervision of Industrial Personnel (3). Pr., junior standing.
Application of the principles of learning to the training of factory, office, and sales employees.
463. Interviewing and Classifying Industrial Personnel (3). Pr., junior standing.
Principles and practices in interviewing.
480. History of Psychology (4). Pr., junior standing and 20 hours psychology or departmental approval.
Evolution of psychology from physics, physiology, and philosophy to a science of behavior.
490. Special Problems in Psychology (3 to 8; may be repeated for maximum of 8 hours). Pr., junior standing, departmental approval.
An individual problems course. Each student will work under the direction of a staff member on some experimental or theoretical problem of mutual interest.

GRADUATE COURSES

- 600-601. Behavior Theory I, II (5-5). Pr., 20 hours of experimental and theoretical psychology and departmental approval; 600 for 601.
Survey of current theory in psychology and introduction to theory construction.
611. Theory of Measurement (5). Pr., PG 415, PG 625, and departmental approval.
Statistical theory of error and true values; scaling methods.
620. Experimental Psychology I: Learning (5). Lec. 3, Lab. 6. Pr., PG 215 and PG 320 or PG 450.
Analysis of learning stressing experimental methodologies illustrative of major theoretical approaches.
621. Experimental Psychology II: Psychophysics (5). Lec. 3, Lab. 6. Pr., 20 hours of experimental and theoretical psychology.
Physiology of receptor function and methodologies relating physical properties of stimulation to subject response variables.
622. Experimental Psychology III: Personality (5). Lec. 3, Lab. 6. Pr., PG 601.
Experimental studies of complex processes in humans.
623. Analysis of Behavior (5). Lec. 2, Lab. 10. Pr., PG 620.
Methods and concepts of operant conditioning research with animals and humans stressing current research and literature.
625. Experimental Design I (5). Pr., PG 215 and PG 320.
Analysis of variance, expected mean squares, and correlation methods.

626. **Experimental Design II** (5). Pr., PG 625 and 620, 621, or 622. Advanced topics in variance and multivariate analysis relating to research design.
631. **Social Psychology** (5). Pr., PG 431. Major systems and theories relating to social psychology, including *Gestalt*, reinforcement, psychoanalytic, role and field theory.
635. **Theories of Personality** (5). Pr., PG 433 and 601. Continuation of PG 433 emphasizing analysis of current issues.
637. **Behavior Pathology** (5). Pr., PG 435, 635, and permission of instructor. Continuation of PG 435 emphasizing current theoretical conceptions and research in psychopathology.
640. **Physiological Psychology** (5). Lec. 2, Lab. 10. Pr., PG 621. Relation to physiological and anatomical, particularly neuroanatomical, variables to the organism's capacity to respond to stimulation.
645. **Comparative Psychology** (5). Lec. 2, Lab. 10. Pr., PG 623, 625, and 640. Analysis of intra- and inter-species behavior emphasizing physical and physiological uniqueness, response comparability, and generalizability of behavioral principles.
650. **Theories of Learning** (5). Pr., PG 450 and 601. Continuation of PG 450 emphasizing analysis of current issues.
670. **Individual Testing** (5). Lec. 2, Lab. 10. Pr., PG 415 and departmental approval. Supervised practice in the administration and interpretation of individual intelligence tests.
671. **Personality Assessment I** (5). Lec. 3, Lab. 6. Pr., PG 670 and departmental approval. Theory and application of methods of personality measurement with emphasis on interview and self-report data, and on the interpretation of tests of specific behavioral deficits.
672. **Personality Assessment II** (5). Lec. 3, Lab. 6. Pr., PG 671 and departmental approval. Theory and application of methods of personality measurement with emphasis on projective techniques.
675. **Objective Techniques of Assessment** (5). Pr., PG 415 and 433. Administration and interpretation of objective measures of aptitudes, performance, and personality.
680. **Current Research in Psychology** (2). May be repeated for a maximum of 10 hours of credit. Pr., permission of the instructor. Review of current research on selected topics in psychology. Six hours credit in this course required of all doctoral students.
690. Seminar. Credit to be arranged. May be taken more than one quarter. Topics for advanced students, chosen according to need.
692. **Research in Special Topics**. Credit to be arranged. May be taken more than one quarter.
699. **Research and Thesis**. Credit to be arranged. May be taken more than one quarter.
799. **Research and Dissertation**. Credit to be arranged. May be taken more than one quarter.

Secondary Education (SED)

Head Professor Atkins

Professors Davis, Herndon, and Scheid

Associate Professors Easterday, Justice, and Weaver

Assistant Professors Alley, Ensminger^{}, Graves, Miles, Shell, and Yielding*

Instructors Creekmore^{}, Curlington^{*}, and Mobbs*

Visiting Professor Riggsby^{}*

Undergraduate

101. **Orientation: Personal and Professional** (3).

Helps curricula transfers and students enrolled in other schools achieve optimum personal, social and intellectual development as college students and to assist them in understanding teaching as a profession. (Students sectioned by area of specialization.) (Credit in SED 101 excludes credit in SED 102-3-4.)

* Temporary.

102-3-4. Orientation: Personal and Professional (1-1-1).

(Students sectioned by area of specialization.) (Credit in SED 102-3-4 excludes credit in SED 101.)

(A) Art, (B) Business Education, (C) Dramatic Arts, (D) Foreign Languages, (F) Home Economics, (G) English Language Arts, (H) Mathematics, (J) Music, (K) Science, (L) Social Science, (M) Speech, (S) Undeclared Majors.

201. Education (2).

Designed to help prospective teachers in the guidance of students. (A) Art Expression, (J) Music Experiences, (O) Exceptional Children, (P) Communication Problems, (Q) Materials of Instruction, (R) Improvement in Reading.

201L. Education (1). Lab. 2.

Laboratory will be taken concurrently with the corresponding lecture course or independent of the lecture.

Curriculum and Teaching

Undergraduate students in secondary education with a teaching major and minor in secondary education only will take one course in Teaching and one course in Program in the major field and one course in either Teaching or Program in the minor field.

Students in secondary education may pursue a curriculum leading to certification for teaching in selected subject-matter fields in both the elementary and the secondary school. When this type program is pursued, certification requires that the student complete both the Teaching and the Program courses in the teaching field or fields in which certification is expected. Teaching fields for the twelve-grade program include health, physical education and recreation, industrial arts, and the subject-matter areas listed under Interdepartmental.

Teaching and Program courses may be scheduled and taught as separate courses, related courses, or as a unified program.

405. Teaching in Secondary School (3). Lec. 2, Lab. 2. Pr., 9 hours of Psychology, FED 200 or equivalent; Pr., or coreq., FED 300 or equivalent.

(B) Business Education (Fall); (D) Foreign Languages (Fall); (G) English Language Arts (Fall, Spring); (H) Mathematics (Fall); (K) Science (Fall); (L) Social Science (Fall, Winter, Spring).

407. Teaching Home Economics Education (5). Lec. 4, Lab. 2. Fall, Spring. Pr., 9 hours of Psychology, FED 200 or equivalent; Pr., or coreq., FED 300 or equivalent.**410. Program in Secondary School (3). Lec. 2, Lab. 2. Pr., 9 hours of Psychology, FED 200 or equivalent; Pr., or coreq., FED 300 or equivalent.**

(B) Business Education (Spring); (D) Foreign Languages (to be arranged); (G) English Language Arts (Winter, Spring); (H) Mathematics (Spring); (K) Science (Spring); (L) Social Science (Fall, Winter, Spring).

412. Program in Home Economics Education (4). Lec. 3, Lab. 2. Fall, Spring. Pr., 9 hours of Psychology, FED 200 or equivalent; Pr., or coreq., FED 300 or equivalent.**425. Student Teaching in Secondary School (10 or 15). Fall, Winter, Spring. Pr., 9 hours of Psychology, FED 200 or equivalent; FED 300 or equivalent, two courses on Teaching and Program in the Secondary School, and senior standing. (B) Business Education, (D) Foreign Languages, (F) Home Economics Education, (G) English Language Arts, (H) Mathematics, (K) Science, (L) Social Science.**

Advanced Undergraduate and Graduate

475. Problems in Improvement of Reading at the Secondary School Level (5). Pr., teaching experience or consent of instructor.

Problem areas of effective reading instruction in developmental reading. Grades seven through twelve. Emphasis on techniques and materials for the teaching of comprehension, study skills, vocabulary, and other related areas in the reading program and in the content areas of the secondary school.

494. Organization of Instrumental Music (3). Pr., IED 414.

Theory and practice in the organization and administration of instrumental music in public schools.

495. Organization of Choral Music (3). Pr., IED 414.

Theory and practice in the organization and administration of choral music in public schools.

Graduate

- 646. Studies in Education (1-3).** Pr., one quarter of graduate study. A problem using research techniques, to be selected in consultation with the supervising professor. A problem should be selected which will contribute to the program of the student. (Credit in ED 651 prior to 1960 excludes credit in this course.)
- Each of these courses, 651, 652, 653, and 654, applies to the following areas of the secondary school program: (B) Business Education, (D) Foreign Languages, (F) Home Economics Education, (G) English Language Arts, (H) Mathematics, (K) Science, and (L) Social Science.
- 651. Research Studies in Education in Areas of Specialization (5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education. Review, analysis, and interpretation of available research with emphasis on designing new research to meet the changing needs of the school.
- 652. Curriculum and Teaching in Areas of Specialization (5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education. Critical study of teaching practices and reappraisal of selecting experiences and content for curriculum improvement.
- 653. Organization of Program in Areas of Specialization (2-5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education. Advanced course. Program, organization and development of basic and supplementary materials for guiding teachers, faculties, and school systems in the continuous improvement of curriculum and teaching practices.
- 654. Evaluation of Program in Areas of Specialization (2-5).** Pr., 18 hours of appropriate subject matter and 36 hours of psychology and professional education. Evaluation and investigation of teaching effectiveness with attention also given to the utilization of human and material resources and the coordination of areas of specialization with the total school program and with other educational programs of the community.

Study in other teaching areas including art; dramatic arts; gifted; mental retardation; music; speech; speech correction; health, physical education and recreation; and industrial arts is available also to students in secondary education.

- 659-660. Practicum in Area of Specialization (5-5).** Pr., Master's Degree or equivalent in Education and permission of major professor.

The practicum provides advanced graduate students with supervised experience with emphasis on the application of concepts, principles, and skills acquired in previous course work.

Science**Undergraduate**

- 453. Science and Modern Living (5).** Lec. 4, Lab. 2. Pr., junior standing. Interpretative course stressing the relationship of science to problems of personal and social living in modern technological society. The critical role of science in democracy.
- 473. General Science for Teachers (5).** Lec. 4, Lab. 2. Pr., junior standing. Gives the teacher essential knowledge of such fields as earth science, meteorology, astronomy, nuclear energy, which constitute significant aspects of the general science program.

Graduate

- 640-641. Advanced Study of High School General Science.** Pr., SED 473. Intensive study of selected topics from the area of the high school general science program.

For advanced courses in curriculum, school library science, higher education, and research and dissertation, see IED.

- 699. Thesis Research.** (Credit to be arranged.) (May be taken more than one quarter.)

Secretarial Administration (SA)

Associate Professor Lamar

*Assistant Professors Brown and F. Hale
Instructors Bond, B. Andress*, and M. Street**

- 200. Typewriting I (3).** Lab. 5. Mastery of keyboard; techniques of machine operation; basic typewritten applications. For students with no previous training in typewriting. (Students with high school typewriting receive no credit.)

* Temporary.

201. **Typewriting II (3).** Lab. 5. Pr., SA 200 with grade of C or one year of high school typewriting.
Emphasis on business letters and forms; tabulation; reports.
202. **Typewriting III (3).** Lab. 5. Pr., SA 201 with grade of C.
Advanced typewritten communications with special problems and arrangement. (Students with two years of high school typewriting consult with OA staff about placement.)
203. **Typewriting IV (2).** Lab. 3.
Statistical typewriting; composition at the typewriter; executive office projects.
210. **Shorthand I (5).** Pr., SA 200 or equivalent.
Principles of Gregg shorthand, DJS. Rapid reading of shorthand; introduction of dictation techniques. For student with no previous training in shorthand. Students with one year of high school shorthand begin with second course.
211. **Shorthand II (5).** Pr., CA 210 with grade of C or equivalent.
Continuation of Shorthand I; dictation and development of pretranscription skills. Students with two years of high school shorthand begin with third course.
212. **Shorthand III (5).** Pr., SA 211 with grade of C.
Continuation of Shorthand II with emphasis on dictation speed and development of pre-transcription skills.
300. **Transcription I (5).** Lab. 10. Pr., SA 212 with grade of C or equivalent.
Development of transcribing skills progressing from transcription of printed shorthand to mailable transcription of unfamiliar material dictated at progressively higher rates of speed. Continuation of shorthand speed building 100 to 120 wam.
301. **Transcription II (5).** Lab. 10. Pr., SA 300 with grade of C.
Terminal course. Emphasis on high-quality transcripts evaluated according to transcription rate and speed of dictation. Shorthand speed 120 to 140 wam.
305. **Records Management (3).** Pr., junior standing.
Basic procedures of filing, records storage and control. Practice in record keeping.
400. **Office Machines (5).** Lab. 10. Pr., junior standing or consent of instructor and ability to type at reasonable speed.
Designed to give a working knowledge of various machines found in modern offices. Basic training in use of dictating and transcribing, duplication, adding, calculating, and posting machines.
402. **Office Apprenticeship (5).** Lab. 10. Pr., SA 301, SA 403 or SA 404, and junior standing.
Practical secretarial experience. Student spends two hours each day working as intern in an office to which assigned for actual office experience.
403. **Secretarial Procedure I (5).** Pr., SA 300 and junior standing.
Analysis of the secretarial profession stressing importance of personal factors, development of decision-making ability, study of specialized duties including those of public relations.
404. **Secretarial Procedure II (5).** Pr., SA 300 and junior standing.
Continuation of Secretarial Procedure I with study of important areas of preparation for the prospective administrative assistant, including preparation of reports using basic knowledge of data processing and statistics, financial and legal duties, and duties of supervision. Case studies.

Sociology (SY)

Acting Head Professor Hartwig

Associate Professor Shields

Instructors Arnold, Carson, French, and MacKenzie*

201. **Introduction to Sociology (5).** Pr., sophomore standing and qualified third quarter freshman with departmental approval.
Principles and processes influencing the social life of man.
202. **Social Problems (5).** Pr., SY 201.
Current social problems with special reference to the socially inadequate.
203. **Cultural Anthropology (5).** Pr., sophomore standing.
Nature of culture, using materials taken from scientific studies of societies.
204. **Social Behavior (5).** Pr., SY 201 or PG 211.
Integrated social-anthropological, biological and psychological factors which influence or determine human behavior; the emphasis is upon the normal average individual and/or group situations.

* Temporary.

205. **Preparation for Marriage (3).** General elective. Open to freshmen with consent of instructor.
Basic factors in dating courtship, mate selection and engagement in preparation for marriage and family living.
207. **Introductory Archaeology (5).** Pr., SY 201 or SY 203.
Survey of the history, principles, and methods for investigating and reconstructing past cultures.
220. **Statistics (5).** Pr., SY 201.
Basic statistical concepts, measures, and techniques used in sociological reports and research.
301. **Sociology of the Family (5).** Pr., SY 201 and junior standing.
The family in contemporary society.
302. **Criminology (5).** Pr., SY 201 and junior standing.
The causes of crime and its social treatment. Field trips required.
303. **History of Anthropology (5).** Pr., SY 203.
The development of anthropological thought from functionalism and evolutionism to culture and personality research and whole-culture analysis.
304. **Minority Groups (5).** Pr., junior standing.
Racial composition of the United States with special emphasis upon the adjustment of minority groups to the culture.
305. **Culture and Personality (3).** Pr., SY 201.
Socio-cultural factors in personality development and recent studies in national character.
306. **Penology (5).** Pr., junior standing and SY 302.
The history and development of corrections with particular emphasis upon modern rehabilitative processes.
308. **Juvenile Delinquency (5).** Pr., SY 201.
Survey of historical and contemporary considerations relative to the juvenile offender. The emphasis is upon research data from the various sciences attempting to deal with this problem.
309. **Social Thought (5).** Pr., junior standing and SY 201 or consent of instructor.
Survey of significant social thought leading to the emergence of modern sociological theory.
310. **Social Organization (5).** Alternate years. Pr., SY 201 or consent of instructor.
Structure and stratification of society with particular attention given to the contemporary scene.
311. **Technology and Social Change (3).** General elective. Pr., junior standing.
Relationship between technological development and changes in modern society. Special emphasis placed upon the human relations aspects of modern science. Designed primarily to meet social science needs of students in the fields of engineering, agriculture, education, and the physical sciences.
312. **Marriage Adjustments (3).** General elective. Pr., junior standing.
Survey of emotional, social and biological factors in the family setting with emphasis upon adjustments of marriage and parenthood.
370. **Methods of Social Research (5).** Pr., SY 201 or AS 361.
The principal methods of data collection and analysis in sociological research. Same course as AS 370. Credit in AS 370 excludes credit in SY 370.
401. **Population Problems (5).** Pr., senior standing.
Problems of quantity and quality of population including problems of composition, distribution and migration. Attention is given to Alabama population.
402. **Social Theory (5).** Pr., SY 201 or consent of instructor; senior or graduate standing.
Survey of the range of contemporary social theory.
403. **Contemporary Anthropology (5).** Pr., SY 203, junior standing.
A survey of contemporary primitive, traditional and urban cultures, and recent research in culture change.
404. **Sociology of Power (5).** Pr., SY 201, junior standing.
A systematic concern with the dimensions and distribution of power in social life.
405. **Urban Sociology (5).** Pr., senior standing.
Growth and decline of cities with special emphasis on ecological and demographic characteristics, associations and institutions, class systems, and housing and city planning.
406. **Introduction to Social Welfare (5).** Pr., senior standing.
Survey of the social welfare field, including social case work. Primarily for students planning a career in the social welfare or related fields.
407. **Public Opinion and Propaganda (5).** Pr., junior standing, SY 201.
Survey in the area of social communication; the formation, place and importance of publics in modern society, of public opinion research, and of propaganda and public relations techniques.

408. Industrial Sociology (5). Pr., junior standing, SY 201. Introductory survey of the sociological approach to business organization and industrial relations. Emphasis given to organization principles operative in the economic life within a social system such as a factory or business establishment.
409. Sociology of Religion (5). Pr., SY 201, senior standing, or consent of instructor. Analysis of religion as a social institution as found in the world's great religions. (To be offered in alternate years.)
410. Sociology of Knowledge (5). Pr., SY 201 or consent of instructor. A review of sociological approaches to the understanding of human knowledge; a tracing of connections between knowledge and other facets of the sociocultural context.
414. Field Instruction (5). Pr., junior standing and consent of instructor. Supplementary instruction concurrent with field experience in some field of work involving application of sociological perspectives to community life.

GRADUATE COURSES

602. Seminar in the Family (5). Pr., SY 301 or HE 304 or consent of instructor. Advanced study of the institutional nature of marriage and the family with particular emphasis upon the changing practices and notions in marital relationships as related to changes in the structure and functions of the family.
603. Social Problems (5). Pr., SY 202 and consent of instructor. Special social problems such as old age, crime and delinquency, minorities, etc., within the framework of social problem theory.
604. Seminar in Race and Culture (5). Pr., SY 201 and SY 304 or consent of instructor. Adjustment of races to culture with particular reference to the South; the historical and cultural background of the races in America; bi-racial system; problems of race relations.
650. Sociology Seminar. Not to exceed 10 hrs. Pr., graduate standing or consent of instructor. Designed for students engaged in intensive study and analysis of sociological subject areas. NOTE: AS 461 and AS 462 are open to sociology majors; see Department of Agricultural Economics and Rural Sociology course offerings.

Speech (SP)

*Head Professor Davis
Professors Ranney and Smith*

*Assistant Professors Gray, Flannery, Moore, Ouzts, Phillips, Richardson, and Sanders
Instructors Daniel, Horton, Larra, Morrow, and Vickrey*

a. Fundamentals

101. Listening Improvement (1). Lec. 1, Lab. 1. Developmental listening for students who wish to improve their skill in this area.
200. Survey of the Bases of Speech (5). Acquaints the prospective speech major or minor with the fundamentals of speech, the historical, psychological, sociological and other bases.
201. Introduction to Oral Communication (5). The nature, purposes, and process of oral communication. Theories of language, goals of various forms of oral communication are considered. Deviations from normal speech and special problems in communication are explored.
300. The Speech and Hearing Mechanism (5). Anatomy and physiology of the speech and hearing mechanism.
301. Phonetics (3). Lec. 2, Lab. 2. Principles of phonetics and their application to speech.
401. Psychology of Communication (5). Pr., junior standing, PG 211 or 213 and PG 330. Speech as a psychological phenomenon with consideration of language development, symbolism, verbal learning. Small groups and audience behavior and psychological studies in various areas of communication situations.
601. Introduction to Graduate Study in Speech (5). Exploration of areas in which research is needed; resources available; methods of research in speech; structuring the research problem; presenting the results of research in speech.

607. **Independent Study (1-5).** (Course may be repeated not to exceed 10 hours credit.)
 A. Public Address; B. Interpretation; C. Radio and Television; D. Group Methods; E. Speech Pathology; F. Audiology. Conferences, readings, research, and reports in one of the listed areas.

699. **Thesis.** (Credit to be arranged.)

b. Public Address

210. **Public Speaking (3).** All quarters. General elective.
 Aids the student in preparing and delivering effective public speeches extemporaneously. Emphasis on narrative, expository, argumentative and motivational speeches. (Credit in this course excludes credit in SP 211.)
211. **Essentials of Public Speaking (5).** All quarters.
 Theory and practice of effective public speaking involving content, organization, language, voice and bodily action. Instruction in method of preparing and delivering of extemporaneous speeches and in the various means of making ideas effective. A special section offered for foreign students. (Credit in this course excludes credit in SP 210.)
310. **Great American Speeches (3).** All quarters. General elective.
 Critical study and comparison of representative outstanding American speeches; the issues with which they were identified; their relation to the social scene.
311. **Advanced Public Speaking (5).** Pr., SP 211 or 210, or by consent of instructor.
 Structure, style, and delivery of various types of speeches for different occasions, speeches to inform, to persuade, and to entertain. Theory and study of current examples combined with practice.
411. **Persuasive Speaking (5).** Pr., junior standing and SP 211 or 210 or consent of instructor.
 Influencing individuals and audiences by means of spoken appeals. Salesmanship speaking. Analysis of forces which led to belief and action. Practice in organizing and presenting such appeals.
- 610-11. **History and Development of Rhetorical Theory I, II (5-5).** Pr., consent of instructor.
 Advanced studies in the historical development of writings, men and movements. Materials selected from the periods: A. Ancient and Medieval; B. Renaissance and Modern.
615. **Rhetorical Criticism (5).** Pr., consent of instructor.
 The history and method of rhetorical criticism. Application of critical standards to selected men and their work.

c. Interpretation

220. **Fundamentals of Oral Interpretation of Literature (5).** All quarters.
 Oral readings of prose, poetry and drama, enhancing the student's understanding and appreciation of the art of literature by engaging him actively in reading the literary text aloud.
421. **Oral Interpretation of Prose and Drama (5).** Pr., junior standing and SP 220 or consent of instructor.
 Develops skill in the oral reading of prose and drama. Study of theories concerning the sound, sense and performance of these two types of literature.
422. **Oral Interpretation of Poetry (5).** Pr., junior standing and SP 220 or consent of instructor.
 Theories concerning problems in reading verse, criticism and performance; modes of group performance are included.
620. **The History and Theory of Interpretation (5).**
 The growth and change of theories regarding oral interpretation.

d. Television-Radio-Film

230. **Introduction to Broadcasting (5).** Pr., SP 211 or 210 or consent of instructor.
 The history, growth and development of broadcast communications and the legal, social and political aspects of broadcasting.
232. **Broadcast Instrumentation (3).**
 Basic principles in the reproduction of sound and pictures, familiarization with the electronic characteristics of basic equipment in television, radio and film.
234. **Broadcast Production Techniques—Radio (5).** Pr., SP 232 or permission.
 Analysis of the creative efforts and responsibilities in the primary stages of broadcast production. Practice in writing, producing, directing, performing and crewing radio productions and taped material.
235. **Modes of Film Communication (5).**
 The film industry's contribution to television and other forms of mass communication; an analysis of the styles and forms of film production as entertainment, communication, education and art.

236. **Broadcast Production Techniques—Television (5).** Pr., SP 232 or permission. Practice in writing, producing, directing, performing and crewing television productions and video-tape materials.
238. **Broadcast Speech (3).** Pr., SP 210 or 211 or permission. Introduction to the responsibilities and skills required of the individual performer in the preparation, announcing and narration of various types of non-dramatic material for television and radio.
334. **Advanced Radio Broadcasting (5).** Pr., junior standing and SP 234 or consent of instructor. Continuation of SP 234. Advanced course in announcing techniques, program organization, audience analysis, recording, sound effects, directing.
335. **Development of the Film (5).** Pr., 235 or permission. The role of film, its history, contributions and effectiveness as an area of expression and communication; an analysis of the social, artistic, economic and cultural factors which have influenced the film.
336. **Television Production-Direction I (5).** Pr., SP 236 or permission. Individual and group projects in the development and production of programs and formats; an intense study of directing theory and the director's role through presentation of educational and dramatic materials.
338. **Broadcast News Writing (5).** Pr., junior standing and permission. Writing and editing news and informational material for television and radio. Students solicit and prepare news from and for local sources.
436. **Television Production—Direction II (5).** Pr., junior standing and SP 336. Individual and group projects in the creation of program material with special emphasis on the writer-producer and his role in the industry.
438. **Television—Radio—Film Writing (5).** Pr., junior standing and permission. The technique of writing dramatic and non-dramatic material for television, radio and films. Special emphasis is placed on performance. Students may elect to emphasize one area.
439. **Broadcasting in Education (5).** Pr., junior standing. The uses, problems, potentialities and current developments in educational broadcasting with special emphasis on instructional and educational television.
630. **Studies in Radio, Television and Film (5).** Pr., consent of instructor. Combined media and their relationship with speech and communication.
631. **History of American Broadcasting (5).** Pr., consent of instructor. The origin of radio and television broadcasting and its development to the present day.
632. **Broadcast Programming and Criticism (5).** Pr., consent of instructor. The theory and practice of programming, its problems and concepts, coupled with an analysis of the criticism leveled at the process and the product.
633. **Broadcast Regulations (5).** The social and political control of broadcasting by agencies, groups, and organizations through legal, social and economic means.

e. Speech Pathology and Audiology

(*Speech Pathology*)

050. **Speech Improvement (5 hr. Lab.—non-credit).** May be repeated. Encourages the individual development and use of an acceptable pattern of speech with special attention to intelligibility, pronunciation, intensity, sound discrimination, voice quality and the objective attitude.
355. **Clinical Procedures in Speech (1-3).** Course may be repeated. Orientation and an introduction to supervised clinical activity in the area of speech disorders. Clinical practice required.
450. **Principles of Speech Correction (5).** Pr., junior standing. Not open to students emphasizing or majoring in speech correction and audiology. Basic principles underlying a speech correction program in a school setting. Description and discussion of speech disorders; surveys and identification techniques.
451. **Speech Correction I (5).** Pr., SP 300 and 301. For Speech Majors. The nature of the speech correction process with emphasis on disorders of articulation. Participation in clinic activities required.
452. **Speech Correction II (5).** Pr., junior standing and SP 451 or consent of instructor. Continuation of SP 451 with emphasis on vocal disorders and disorders of rhythm. Participation in clinic activities required.

453. **Speech Correction III (5).** Pr., junior standing and SP 452 or consent of instructor.
Emphasis on disorders of symbolization and delayed language development. Participation in clinic activities required.
650. **Speech Pathology (5).** Pr., SP 453 or consent of instructor. May be repeated not to exceed 15 hours credit.
Advanced studies dealing with disorders of speech. Materials may be drawn from: A. cerebral disturbances (aphasia and cerebral palsy); B. palatolaryngeal disturbances (esophageal and cleft palate); C. voice disorders; D. stuttering; E. articulation (including dialect); F. delayed speech development.
655. **Clinical Problems in Speech (1-3).** Pr., SP 453 or equivalent. The course may be repeated.
Methods, techniques, and clinical management of the disorders of speech. Clinical practice required.

(Audiology)

365. **Clinical Procedures in Hearing (1-3).**
Orientation and an introduction to supervised clinical activity in the area of hearing disorders. Clinical practice required.
460. **Introduction to Problems in Hearing (5).** Pr., junior standing.
Principles of auditory reception, the hearing mechanism and the problems involved in measuring, evaluating, and conserving hearing. Clinical observation.
461. **Hearing Pathology (5).** Pr., SP 460 or equivalent.
Evaluation and rehabilitation of aural handicapped children and adults; hearing aids and auditory training. Clinical practice.
462. **Hearing Rehabilitation (5).** Pr., junior standing, SP 461 or consent of instructor.
Detailed concern for the rehabilitation problems of children and adults in the areas of auditory training, speech reading and speech conservation. Clinical practice.
660. **Audiology (5).** Pr., SP 460 or consent of instructor. May be repeated not to exceed 15 hours credit.
Advanced studies dealing with the disorders of hearing. Materials drawn from: A. speech reading; B. auditory training; C. hearing testing and measurement; D. child and adult rehabilitation; E. hearing aids and hearing aid evaluation; F. education of the deaf.
665. **Clinical Problems in Hearing (1-3).** Pr., SP 460, 461, or equivalent. The course may be repeated.
Methods, techniques, and clinical management of the disorders of hearing. Clinical practice required.

f. Group Methods

270. **Group Leadership (3). All quarters. General elective.**
Nature and functions of group leadership; the role of democratic leadership in organizing and conducting a group meeting to reach group aims. Students gain leadership experience in class activities to help them learn and perfect democratic leadership techniques.
273. **Group Problem-Solving Through Discussion (5). All quarters.**
Group problem solving through discussion. The values and limitations of discussion, the prerequisites of reaching agreement and a systematic approach to solving problems in group discussion. Leadership in problem solving.
275. **Debate Workshop (1).** May be repeated for a maximum of 3 credit hours.
Introduction to the national debate question for beginning debaters interested in competition debate. Lecture and practical work.
278. **Argumentation and Debate (5).**
Debating techniques and procedures; their application to issues of current public interest; the gathering, organization, and presentation of facts, proofs, evidence.
371. **Parliamentary Procedure (3). All quarters. General elective.**
To aid the individual who may lead or participate in discussions or organizations where orderly procedure is needed. Theory and practice both employed.
375. **Debate Workshop (1).** May be repeated for a maximum of 3 credit hours.
Advanced study of the national debate question for experienced debaters. Analysis of logical, ethical and emotional proofs in competition debate. Lecture and practical work.
473. **Advanced Discussion (5).** Pr., junior standing and SP 273 or consent of instructor.
The theory and organization of problem-solving discussion and conference groups. Primarily for persons who work with groups.

478. Advanced Argumentation and Debate (5). Pr., junior standing and SP 278 or consent of instructor.
Function of argumentation and debate in a democracy and its application of principles of logic and evidence in past and present public speaking and debating.
673. Seminar in Discussion (5). Pr., SP 273 or equivalent.
Group problem solving through discussion. Includes the survey of published experimental work in discussion and considers the values and limitations of discussion as tools of the democratic leader. Special attention is paid the application of group problem-solving in education, business, industry and agriculture.
678. Seminar in Debate (1-5). (May be repeated not to exceed 5 hours credit.)
Psychological concepts of argument. Techniques and methods employed in argumentative discourse. Critical analysis of selected controversies and a survey of published experimental work in debate.

Textile Engineering (TE)

Head Professor Adams

Professors Knight and Waters

Associate Professors Farrow and Hall

Assistant Professor Phillips

101. Introduction To Textiles (1).
Orientation course for freshmen which briefly introduces all branches of the textile industry.
210. Fiber Processing (5). Lec. 4, Lab. 3.
Construction and operation of equipment for opening, cleaning, blending, picking, carding, combing, drawing; adaptation of these processes to synthetics and wool; calculations necessary for the planning and operation of this equipment.
211. Yarn Manufacture I (5). Lec. 4, Lab. 3.
Construction and operation of roving and spinning equipment for cotton, wool, and synthetics; long draft systems and special drafting, systems for blends, etc.
220. Weaving and Designing I (5). Lec. 4, Lab. 3.
Automatic cam loom mechanism with designing of fabrics made on these looms.
305. Fiber Technology (3). Lec. 2, Lab. 3. Pr., sophomore standing.
Origin, characteristics, and properties of the various textile fibers, both natural and man-made; fiber microscopy.
307. Bleaching and Dyeing (5). Lec. 4, Lab. 3.
Bleaching, dyeing and finishing of natural and man-made fiber fabrics; all types of dyes for textiles, their application and fastness.
317. Dyeing and Finishing (5). Lec. 4, Lab. 3. Pr., TE 307.
Plant application methods and plant problems in dyeing, finishing and printing of natural and man-made fibers.
319. Chemical Testing (2). Lec. 1, Lab. 3. Pr., junior standing.
Procedures and laboratory work on all types of textile tests of a chemical nature; analysis of textile chemicals.
320. Weaving and Designing II (5). Lec. 4, Lab. 3. Pr., TE 220.
Dobby and multibox operation, pattern planning, and designs applicable to dobby and box looms.
321. Weaving and Designing III (5). Lec. 4, Lab. 3. Pr., TE 320.
Special weaving attachments, and production of specialty fabrics. Weaving mill organization. Fabric identification.
322. Yarn Manufacture II (5). Lec. 4, Lab. 3. Pr., TE 210 and TE 211.
Methods of obtaining higher quality yarns; yarn production planning; practical manufacturing problems; yarn mill machinery layout and labor organization.
324. Physical Testing (3). Lec. 2, Lab. 3. Pr., junior standing.
Testing procedures, laboratory use of textile testing equipment and interpretation of data.
325. Textile Quality Control (2). Pr., TE 210, TE 211, EC 245; Coreq. TE 324.
A practical system of textile quality control.
401. Engineering Aspects of Textile Materials and Processes (5). Lec. 4, Lab. 3. Pr., senior standing.
Textile fibers and processes emphasizing the basic engineering elements of each.
405. Warp Preparation (5). Lec. 4, Lab. 3. Pr., junior standing.
Preparation of warp yarn for weaving.
406. Textile Costing (5). Pr., junior standing.
Basic principles for figuring textile production costs; allocation of costs; fabric cost sheet; marketing costs.

- 412. Textile Management (3).** Pr., junior standing.
Analysis of management problems in textile industry including policy determination, job analysis, work loads, training, organization, plant layout, etc.
- 417. Advanced Dyeing (5).** Lec. 4, Lab. 3. Pr., TE 317.
Dyestuff manufacture, shade matching and instrumentation.
- 418. Jacquard Weaving and Design (2).** Lec. 1, Lab. 3. Pr., TE 220 and junior standing.
Jacquard mechanism and design of original patterns for jacquard loom.
- 424. Man-Made Fibers I (5).** Pr., junior standing.
Manufacturing and processing
- 425. Man-Made Fibers II (5).** Pr., TE 422.
Technological aspects, usage, considerations in the employment of man-made and natural fibers and blends.
- 431. Fabric Analysis (3).** Lec. 2, Lab. 3. Pr., TE 320.
Analysis of fabric structure and determination of specifications.

Vocational, Technical, and Practical Arts Education (VED)

Head Professor Montgomery

Associate Professors Bottoms and Pruett

Assistant Professors Anderson, Baker, Couch, Dawson, Selman, and Sink

Instructors Farrar^o, Hill^o, and Parker^o

Undergraduate

102-3-4. Orientation: Personal and Professional (1-1-1).

Helps freshmen achieve optimum personal, social, and intellectual development as college students. Assists in planning professional careers. (Students sectioned by area of specialization.)

- 246. Instructional Drawing (3). Lab. 6.**
Preparing for the shop laboratory, including making freehand and pictorial sketches and drawings, reading working drawings, blue prints, manufacturers guides, and lettering, use of instruments, dimensioning, making models, floor plans, bills for materials, writing specifications, and developing working plans.
- 330. Careers in Rehabilitation Services (5).**
History, legal basis, and fields of rehabilitation services. Exploration of specialty fields of mental retardation, mental illness, public offender, physically handicapped, speech therapy and hearing, visually handicapped, respiratory disease, alcoholic and aging.
- 346. Vocational and Practical Arts Education (3).**
Ways of studying occupational needs and developing and operating local program of vocational and practical arts education.
- 400. Introduction to Power Mechanics (5). Lec. 2, Lab. 6.**
Design and operational theories related to power machines. Internal combustion engines; power trains; hydraulic and cooling systems.
- 401. Practicum in Small Gasoline Engines (5). Lec. 2, Lab. 6.**
Application of skills and abilities needed in teaching the maintenance and repair of small air cooled engines. Theories of compression, carburetion and ignition; laboratory exercises in repair and maintenance.
- 402. Automotive Construction and Repair (5). Lec. 2, Lab. 6.**
Theories of design, principles of operation, and maintenance and repair of ignition system, fuel systems, power systems and chassis components.
- 404. Practicum in General Metals (5). Lec. 2, Lab. 6.**
Application of skills and abilities needed in the teaching of metal processes applicable to vocational education program in the secondary school. Metal properties; power tools; heat treating; ornamental iron work, cold metal; sheet metal; machining metals; and arc and gas welding.
- 405. The School Shop (3).**
Organization and management of the school shop; methods and materials integrated with the study of jobs and problems basic to the teaching of skills in vocational education.
- 406. Practicum in Building Construction and Maintenance (5). Lec. 2, Lab. 6.**
Application of skills and abilities needed in teaching the erections of buildings and other related structures. Bills of materials; hand and machine woodworking; structural carpentry; plumbing; design and installation of residence wiring; heating and cooling concrete and masonry construction; painting and other related information. (a) Agricultural education majors and (b) Basic vocational education majors.

* Temporary.

407. **Practicum in Electricity (5). Lec. 2, Lab. 6.** Application of skills and abilities needed in the teaching of fundamental principles of electricity. Planning and developing projects involving an understanding of electrical principles as applied to materials selection, circuits, motors and devices; and maintenance and servicing of electrical equipment and appliances.
409. **Teaching Electronics in Industrial Arts (5). Lec. 2, Lab. 6. Pr., departmental approval.** Theories and practices used in school electronic laboratories; projects designed and constructed.
410. **Occupational Information (3). Lec. 2, Lab. 2. Pr., 9 hours Psychology, FED 200 or equivalent, FED 300, Pr. or coreq.** Occupational structure, job qualifications and requirements, sources of occupational information, current trends, industrial and occupational surveys. Preparation, evaluation, and dissemination of occupational information used by teachers in vocational and technical schools.
414. **Program and Teaching (5). Lec. 4, Lab. 2. Pr., 9 hours Psychology, FED 200 or equivalent and FED 300, Pr., or coreq.** (a) Agricultural Education, (b) Distributive Education, (c) Industrial Arts (Elementary and Secondary), (d) Trade and Industrial Education, and (e) Technical Education.
423. **Program in Basic Vocational Education (3). Lec. 2, Lab. 2. Pr., 9 hours Psychology, FED 200 or equivalent, Pr., coreq., FED 300 or equivalent.** (a) Agriculture, (b) Building Construction, (c) Distributive Business, (d) Metals Technology and (e) Power Mechanics.

Undergraduate students with a major in industrial arts will pursue a minor selected from some other teaching area in the secondary school program or in one of the areas included in the twelve-grade program. (For appropriate course or courses in Teaching or Program, see SED, IED, and PE.)

425. **Student Teaching (10 or 15). Lec. 5, Lab. 20. Pr., 9 hours of Psychology, FED 200 or equivalent; FED 300 or equivalent, two courses in Teaching and Program, and junior or senior standing.** (A) Industrial Arts in Elementary and Secondary Schools, (B) Agricultural Education.
434. **Work Sample Development (5). Pr., VED 330 and junior standing.** Development of methods of selection, standardization, and establishing norms for work samples used in vocational evaluation units.
435. **Vocational Evaluation in Rehabilitation (5). Pr., VED 330 and senior standing.** Evaluation techniques used in appraisal of the abilities of handicapped people to guide occupational choice. Includes use of TOWER system, work samples, on-the-job training, personal adjustment evaluation.
436. **Internship in Rehabilitation (15). Pr., VED 435, VED 476 and senior standing.** Selected experiences supervised by professionals in: (a) sheltered workshops, (b) rehabilitation centers, (c) vocational evaluation units, (d) social services, or (e) personal adjustment training unit.
456. **Learning Resources (3). Lec. 2, Lab. 2. Pr., VED 414.** (a) Agricultural Education, (b) Distributive Education, (c) Industrial Arts (Elementary and Secondary), (d) Trade and Industrial Education, and (e) Technical Education.
458. **Coordination and Supervision of Vocational Education Programs (3). Lec. 2, Lab. 2. Pr., VED 414.** Develops and maintains appropriate relationship between the school and on-the-job program; records of coordination; student placement; improving employable skills and habits; recruitment and selection of work experience applicants; work experience rotation; public information and other similar activities.
462. **Directed Work Experience in Distributive Education (5). Lab. 10. Pr., VED 414.** In-service, supervised work experience. Individually designed for part-time and/or summer experience.
466. **Teaching Out-of-School Groups (3). Pr., VED 414.** Conducting surveys, occupational analysis, using advisory committees, organizing, conducting and supervising various types of adult education.
476. **Organization of Instruction in Trade and Industrial Education (5).** Trade and occupational analysis; principles and procedures of identifying and selecting the skills and knowledge needed in the preparation of courses of instruction. Principles and procedures for individualizing instruction.

Advanced Undergraduate and Graduate*

- 408. Teaching Mechanical Technology (5).** Objectives and methods; equipment and management of vocational education shops; organization of projects; recent developments in specialized areas of mechanics; in-service teaching problems. Student plans for demonstration of methods for teaching mechanical skills.
- 430. Evaluation and Training in Vocational Rehabilitation (4).** Lec. 3 hours daily for 6 weeks, internship 4 weeks. Pr., departmental approval and junior standing. Purposes, principles and techniques of client evaluation and training; including personal, social and physical adjustment, vocational choice and selected techniques used in the evaluation and training process.
- 431. Research in Evaluation and Training in Vocational Rehabilitation (4).** Lec. 3 hours daily for 6 weeks, internship 4 weeks. Pr., departmental approval and junior standing. Study of a problem using research techniques, to be selected in consultation with the supervising professor.
- 432. The Instructional Program in Workshop and Rehabilitation Facilities (3).** Lec. 3 hours daily for 4 weeks, internship 6 weeks. Pr., departmental approval and junior standing. Includes program development, teaching, learning, resources, evaluation, project development and production, and supervision.
- 433. Management of Vocational Rehabilitation Workshops and Facilities (3).** Lec. 3 hours daily for 4 weeks, internship 6 weeks. Pr., departmental approval and junior standing. The function of organization and administration including: federal, state, and local roles, financial support, community interaction, personnel management, and operation of facilities.
- 485. Audio-Visual Materials (5). Lec. 4, Lab. 2. Pr., junior standing.** Examination and evaluation of films, filmstrips, slides, exhibits, charts, maps, globes, recordings, radio, educational television and programmed materials. Attention given to contributions of audio-visual materials to the elementary and secondary school curriculum, to sources of audio-visual materials, and to operation, care and housing of necessary equipment.

Graduate

- 602. Teacher Education in Vocational and Practical Arts (5). Pr., departmental approval.** Designed for supervisors of student teachers, teacher educators, and other graduate students. Major emphases deal with administration of vocational education programs, research, problems which supervising teachers encounter in the student teaching program.
- 603. Problems in Agricultural Occupations (5). Pr., departmental approval.** Securing, organizing and interpreting information for guidance and teaching purposes; curriculum development; developing instruction units and planning teaching activities for on-farm and off-farm occupations.
- 604. Organization and Administration of Adult Education (5). Pr., departmental approval.** History, philosophy, and needs for adult education; nature of adult learning; procedures in organizing adult groups; and administration of adult education programs.
- 606. Programs, Materials and Methods in Adult Education (5). Pr., departmental approval.** Analysis of programs in adult education including public school general adult education, adult farmer education programs conducted by various agencies, and adult programs in community colleges and trades schools; materials and methods appropriate in teaching various age groups.
- 607. Seminar in Research in Agricultural Education (4).** Review and criticism of contributions of research in agricultural education; using research in solving current problems; needs for additional research; planning of a comprehensive study or completion of a small study.
- 608. Administration of Vocational and Practical Arts Education (5). Pr., departmental approval.** Designed to prepare junior college personnel, public school administrators, counselors and teachers for relating current social demands to vocational, technical and practical arts programs in schools. Content includes philosophy, procedures in organization and administration, and changing socio-economic conditions requiring constant adjustments of programs.

* Offered only to participants in training program for workshop and facility personnel in State and Regional offices of Vocational Rehabilitation.

609. Selection, Creation and Use of Audio-Visual Materials (5). Lec. 3, Lab. 4. Pr., VED 485 or consent of instructor.
Selection and use of various materials for specific educational purposes and the production of materials as learning experiences.
646. Studies in Education (1-3). Pr., one quarter of graduate study.
A problem using research techniques, to be selected in consultation with the supervising professor. A problem should be selected which will contribute to the program of the student. (Credit in ED 651 prior to 1960 excludes credit in this course.)
651. Research Studies in Vocational, Technical and Practical Arts Education (5). Review, analysis, and interpretation of available research with emphasis on designing new research to meet the changing needs of the elementary, secondary and post-high school programs.
652. Curriculum and Teaching in Vocational, Technical and Practical Arts Education (5).
Critical study of teaching practices and reappraisal of selecting experiences and content for curriculum improvement in the elementary, secondary and post-high school programs.
654. Evaluation of Programs in Vocational, Technical and Practical Arts Education (2-5).
Evaluation and investigation of teaching effectiveness with attention also given to the utilization of human and material resources and the coordination of areas of specialization within the elementary, secondary, and post-high school programs.
- 659-660. Practicum in Area of Specialization (5-5). Pr., Master's Degree or equivalent, and permission of major professor.
Provides advanced graduate students with supervised experience with emphasis on the application of concepts, principles, and skills acquired in previous course work.
699. Thesis Research. (Credit to be arranged.) (May be taken more than one quarter.)

Veterinary Medicine (VM)

Anatomy and Histology

*Acting Head Professor Whiteford
Assistant Professor James
Instructors Reynolds and Milton
Research Associate Guenther
Technician Dennis*

Microbiology

*Head Professor Neal
Professor Jennings
Associate Professors Attleberger and Cody
Assistant Professors Miller, Wilt, and McCain
Instructors Moore** and Spaulding
Lecturers Alley and Christenberry
Technicians Summers and Carroll*

Pathology and Parasitology

*Head Professor Groth
Research Lecturers Davis, Frandsen, and Isenstein
Professor Roberts
Associate Professors Hoff and Britt
Assistant Professors Diamond, Teer**, Shields, and Benz
Instructor Gosser
Technicians Davidson, McConnell, Castle, and Cooper*

Physiology and Pharmacology

*Head Professor Clark
Professors Burns and Woodley
Associate Professors Alexander, Farnell**, and Beckett
Assistant Professors Robertson, Botta, and Pedersoli
Instructor Wright
Technician Gilder
Graduate Assistant Self*

** On leave.

Large Animal Surgery and Medicine*Head Professor Schell**Professors Gibbons, Wiggins, and Walker**Associate Professors Winkler, Vaughan, Newman, Witherspoon**, and Taul**Instructors Scott and Hudson**Intern Linkous**Technician Johnston***Small Animal Surgery and Medicine***Head Professor Hoerlein**Professor Heath**Associate Professor Horne**Assistant Professors Albert, Ramy, and Doening**Instructor Dorn**Research Assistant Gage**Technicians Jeffrey, Johnston, and Doerstling*

200. General Microbiology (5). Lec. 3, Lab. 4. Fall, Winter, Spring. Pr., General and Organic Chemistry. Fundamentals of microbiology including history of microbiology, morphology, metabolism, classification, identification, cultivation, and distribution of bacteria, viruses, yeasts, and molds; also an introduction to applied microbiology.
204. Pathogenic Microbiology (5). Lec. 3, Lab. 4. Summer, Fall, Spring. Pr., General Microbiology. Microorganisms pathogenic to man and animals. Immunity to, and laboratory diagnosis of, diseases caused by microorganisms.
210. Human Physiology (5). Lec. 3, Lab. 4. All quarters. Functions and manner of operation of the body and its parts, with special emphasis on digestion, circulation and reproduction. Laboratory exercises illustrate the functions of the various organ systems of the body.
220. Human Anatomy and Physiology (5). Lec. 3, Lab. 4. Summer, Fall and Winter. For students in Laboratory Technology and others who are qualified. Human skeletal, muscular and nervous systems. Human models, cats and frogs are used in laboratory to supplement lecture material.
221. Human Anatomy and Physiology (5). Lec. 3, Lab. 4. Winter and Spring. Anatomy and physiology related to the heart, circulation, blood, digestion, metabolism, kidney, respiration, endocrine and reproduction.
311. General Bacteriology (5). Lec. 3, Lab. 4. Winter and Summer. For students in Home Economics. Elementary bacteriology as applied to foods, industry and home sanitation.
318. Physiology I (3). Lec. 2, Lab. 2. Fall. Theoretical and practical application of radioactive nuclides in biologic systems and principles of electronic instruments used in veterinary medicine.
- 320-21-22. Anatomy I, II, III (5-5-5). Lec. 2, Lab. 10. Fall, Winter and Spring. Gross anatomy of domestic animals. A progressive anatomical study of the gross structures of the dog, ox, horse, hog and fowl.
326. Histology (5). Lec. 2, Lab. 6. Fall. Microscopic anatomy of the form, structure, and characteristics of basic animal tissues.
327. Organology (5). Lec. 2, Lab. 6. Winter. Pr., VM 326. Continuation of VM 326. Microscopic anatomy of the tissue composition of organs and organ systems.
328. Embryology (5). Lec. 2, Lab. 6. Spring. Pr., VM 327. Formation and early development of the embryos of domestic animals. Fetal membranes and placentation are emphasized.
329. Physiology II (3). Lec. 2, Lab. 2. Winter. Metabolism, liver function, molecular physiology, and chemical digestion.
330. Veterinary Microbiology I (5). Lec. 3, Lab. 4. Fall. Fundamentals of microbiology for students in veterinary medicine.
331. Veterinary Microbiology II (5). Lec. 3, Lab. 4. Winter. Pr., VM 330 or equivalent. Sources and mechanisms of infections, principles of immunology, and biological prophylaxis and therapy. Also includes serological techniques used in diagnosis of infectious diseases.

** On leave.

332. **Physiology III (2).** Lec. 2, Lab. 2. Spring.
Metabolism, liver function, molecular physiology, and chemical digestion.
336. **Physiology IV (5).** Lec. 4, Lab. 3. Spring.
Endocrinology, reproduction, mechanical digestion, and respiration.
421. **Animal Physiology (5).** Winter.
Physiology of the farm animals with special emphasis on digestion, endocrinology and reproduction.
422. **Animal Disease Control (5).** Spring. Pr., VM 421 and General Microbiology.
Herd management and practices proven to be of value in the prevention and control of the important diseases of farm animals.
- 436-37-38. **Pharmacology I, II, III (5-3-5).** Lec. 3, Lab. 4. Fall, Winter and Spring.
Pharmacodynamics, posology and therapeutics of drugs with veterinary application. Drugs are designated by U.S.P., generic, and proprietary names.
443. **Physiology V (5).** Lec. 4, Lab. 3. Fall.
Neurology and electrocardiology.
444. **Physiology VI (5).** Lec. 4, Lab. 3. Winter.
Blood, circulation, fluids and the kidney.
450. **Pathology I (5).** Lec. 3, Lab. 4. Fall. Pr., VM 326-327-328.
General pathology. Fundamental anatomic and functional alterations of cells and tissues in disease.
451. **Pathology II (5).** Lec. 3, Lab. 4. Winter. Pr., VM 450.
Study of disease processes affecting animals. Emphasis is placed on gross and microscopic changes in organs and systems.
452. **Clinical Pathology (3).** Lec. 1, Lab. 4. Spring. Pr., VM 451.
Methods for the collection, preservation, and examination of various body fluids including blood and urine. Interpretation of results is directed toward clinical diagnosis and prognosis.
453. **Pathology III (3).** Lec. 2, Lab. 2. Spring. Pr., VM 451.
Continuation of VM 451.
456. **Veterinary Parasitology I (3).** Lec. 2, Lab. 2. Fall.
Introduction to parasitology including internal parasites or ruminants.
457. **Veterinary Parasitology II (5).** Lec. 3, Lab. 4. Winter. Pr., VM 456.
Internal parasites of domestic animals.
458. **Veterinary Parasitology III (3).** Lec. 2, Lab. 2. Spring. Pr., VM 457.
Important ectoparasites of domestic animals.
461. **Veterinary Microbiology III (5).** Lec. 3, Lab. 4. Spring. Pr., VM 331 or equivalent.
Detailed study of bacteria, viruses, yeasts and molds causing diseases of domestic animals.
- 500-01-02. **Veterinary Medicine I, II, III (5-5-3).** Fall, Winter and Spring.
Detailed study of the etiology, symptoms, pathogenesis, diagnosis, treatment and prevention of the medical diseases affecting the various systems and organs of the equine, bovine, ovine and porcine species.
503. **Veterinary Surgery I (3).** Lec. 3. Winter.
Background of surgery; major surgical injuries-wounds, fluid loss and infection; preoperative and postoperative care; surgical technique; anesthesia; and extirpative, reconstructive and physiologic surgery.
504. **Veterinary Surgery II (5).** Lec. 5. Spring.
Special surgical diseases of the domestic farm animals including surgery of the alimentary canal, the chest and abdomen, the respiratory and cardiovascular systems, the eye and ear, the genito-urinary tract, and the feet and limbs.
508. **Clinics III (1).** Lab. 10. Spring.
Conferences, laboratory exercises and clinical practice in diagnosis, control and therapy of diseases of large domestic animals.
509. **Clinics IV (1)** Lab. 10. Spring.
Conferences, laboratory exercises and clinical practice in diagnosis, control and therapy of diseases of small domestic animals.
510. **Veterinary Medicine IV (5).** Fall.
Consideration of the noninfectious and parasitic diseases of the respiratory, cardiovascular, gastro-intestinal, urogenital and integumentary systems in the small domestic animals.
512. **Veterinary Surgery III (5).** Lec. 3, Lab. 4. Spring.
Lecture-specific basic surgical techniques. Laboratory-performance of basic surgical operations on anesthetized animals owned by the University.
519. **Veterinary Medicine V (3).** Spring. Pr., VM 510.
Continuation of VM 510. Detailed consideration of differential diagnosis of diseases of small domestic animals.

- 523. Veterinary Public Health I (5). Lec. 4, Lab. 2. Winter. Pr., VM 461.**
Principles of epidemiology, selected diseases of animals transmissible to man and the relationship of the veterinarian to public health and animal disease control agencies.
- 525-531. Jurisprudence and Ethics (1-1). Fall and Winter.**
Laws relating to duties of the veterinarian to the public and to his clients, his liabilities, rights, collection of fees, etc. Ethics as applied to the veterinary profession.
- 526. Clinics I (2). Lec. 1, Lab. 4. Fall.**
Demonstration and practice of methods employed in physical diagnosis, handling, restraint and administration of therapeutic agents to large animals.
- 527. Clinics II (2). Lec. 1, Lab. 4. Winter.**
The demonstration and practice of methods employed in physical diagnosis, handling, restraint and administration of therapeutic agents to small animals.
- 530. Veterinary Radiology (3). Lec. 3. Winter.**
Basic diagnostic radiology including interpretations, techniques, therapy and equipment.
- 534. Laboratory Animal Medicine (3). Lec. 2, Lab. 2. Fall. Pr., VM 461.**
Management, utilization, and diseases of the common laboratory mammals including rats, mice, guinea pigs, hamsters, rabbits and nonhuman primates.
- 540. Veterinary Obstetrics I (2). Winter.**
Infertility of the male and female. Artificial insemination.
- 542. Applied Anatomy (3). Lab. 6. Summer. Pr., VM 522.**
Anatomy related to diagnostic, obstetrical and surgical procedures.
- 550. Veterinary Obstetrics II (2). Spring.**
Pregnancy diagnosis and the causes and corrections of dystocia in large animals.
- 552. Jurisprudence and Ethics (1). Fall.**
Laws relating to duties of the veterinarian to the public and to his clients, his liabilities, rights, collection of fees, etc. Ethics as applied to the veterinary profession.
- 553. Special Anatomy (1 to 5). Hours and credit to be arranged. Pr., VM 320.**
Elective course in which any phase of anatomy of domestic animals to the anticipated field of specialization may be studied.
- 554. Veterinary Medicine VI (5). Summer.**
Study and identification of the poisonous plants of the Southeastern states as well as their characteristic symptoms, lesions and treatment. Selected specific diseases of farm animals are also discussed.
- 555-56. Veterinary Medicine VII, VIII (5-5). Fall and Winter.**
Principal infectious diseases of the large domestic animals. Epizootiology, etiology, symptoms, diagnosis and prevention of diseases, including immunization and sanitation.
- 559. Veterinary Medicine IX (3). Lec. 3. Fall.**
Consideration of the noninfectious diseases of the eye and central nervous system in the small domestic animals.
- 560. Veterinary Obstetrics III (3). Lec. 3. Summer.**
Clinical application of the physiology of reproduction. Teratology.
- 561. Veterinary Medicine X (3). Lec. 3. Fall.**
Methods of diagnosis, necropsy findings, and treatment of common chemical and venom poisoning of farm animals and pets.
- 563-64-65. Clinics VI, VIII, X (2-2-2). Lab. 11. Summer, Fall and Winter.**
Conferences, laboratory exercises and practice in diagnosis, control, and therapy, of diseases of small domestic animals.
- 566-67-68. Clinics V, VII, IX (3-3-3). Lab. 11. Summer, Fall and Winter.**
Conferences, laboratory exercises and clinical practice in diagnosis, control, and therapy, of diseases of large domestic animals.
- 569. Veterinary Public Health II (5). Summer. Pr., VM 542, 458, and 461.**
Principles and methodology of food hygiene including meat, milk, poultry, and other foods related to animal and human health.
- 572-73-74. Veterinary Surgery IV, V, VI (1-1-1). Lab. 2. Summer, Fall and Winter.**
Detailed consideration and performance of advanced small animal surgery.
- 582. Seminar (3). Winter.**
Literature reviews or research problems selected by the student. Papers written and oral presentation given before his class and faculty.
- 588. Veterinary Medicine XI (5). Lec. 5. Winter.**
Special emphasis on the newer aspects of diseases of metabolism and the nutritional diseases of farm animals. Includes diseases of swine and sheep.
- 592. Preceptorship (0). Spring. Non-Credit required course.**
Completion of satisfactory preceptorship during the spring quarter is required for graduation.

GRADUATE COURSES

414. Techniques in Bacteriology (5). Pr., VM 461 or equivalent and junior standing. Any quarter by arrangement.
Advanced techniques used in bacteriology, pertaining to isolation, cultivation and identification of microorganisms. (Course limited to five students.)
418. General Pathology (5). Lec. 3, Lab. 4. Fall. Pr., satisfactory courses in histology and physiology.
Fundamental alterations of disease, adapted for especially qualified graduate students. (Not available for candidates for M.S. in Veterinary Medicine.)
425. Intermediate Human Physiology (5). Lec. 4, Lab. 2. Fall by arrangement. Pr., VM 210 or its equivalent and junior standing.
For advanced students in home economics, education and others who are qualified. A detailed study of the physiology of the various organs of the body. (Not available for candidates for M.S. in Veterinary Medicine.)
441. Physiological Function Tests and Laboratory Diagnosis (5). Lec. 4, Lab. 3. Any quarter by arrangement. Pr., permission of the instructor, acceptable courses in physiology, and junior standing.
Chemical, photometric, and enzymatic procedures used in diagnosis of abnormal body functions. Included are function tests for the thyroid, liver, kidney, heart, pancreas, etc.
460. Histological Techniques (2 to 5). Hours and credit to be arranged. Pr., VM 326 or equivalent and junior standing.
Techniques employed in the preparation of cytological and histological materials.
462. Microbial Physiology (5). Lec. 2, Lab. 6. Pr., VM 200 or other satisfactory courses in microbiology and senior standing. By arrangement.
Metabolic changes occurring within microorganisms, metabolites which are produced and actions on inorganic substances, nitrogenous compounds, citric acid, carbohydrates, etc. Microbial growth, biosynthesis and adaptation. Laboratory will stress qualitative and to a limited extent evidence of quantitative metabolic phenomena. (Available to especially qualified students in other schools as well as to candidates for M.S. in Veterinary Medicine.)
465. Special Techniques in Histopathology (3). Lab. 9. Pr., VM 453, VM 460. Any quarter by arrangement.
Special stains and techniques of histochemistry employed in the preparation of materials for histopathologic study.
467. Gross Pathology (2). Lab. 6. Pr., VM 453, junior standing and permission of instructor. Any quarter by arrangement.
Regular participation in autopsy examinations under supervision of senior staff members. Designed to give the graduate student experience in autopsy procedures and in diagnostic interpretation of gross lesions. (Required of all majors and minors in Pathology.)
480. Radiological Techniques (5). Lec. 3, Lab. 4. Any quarter by arrangement. Radiographic techniques including assignments on basic radiation physics.
495. Virology (5). Lec. 2, Lab. 6. Pr., VM 200 and VM 204 or VM 461; junior standing. Spring.
Basic concepts, methods of isolation, cultivation and purification of viruses and rickettsiae. (For students in biological sciences, biochemistry, pharmacy and veterinary medicine.)
- 601-02. Advanced Pathogenic Microbiology (5-5). Lec. 2, Lab. 6. Any quarter by arrangement. Pr., acceptable courses in microbiology and immunology.
Identification of pathogenic microorganisms and their relationship to animal diseases.
- 604-05. Immunology (5-5). Lec. 2, Lab. 6. Pr., VM 461 or equivalent. Spring quarter by arrangement.
Immunizing agents, methods of establishing immunity, and techniques for demonstrating various types of immunity and antigen-antibody reactions. The work may be arranged to meet the particular interest of the student.
608. Determinative Microbiology (5). Lec. 2, Lab. 6. Fall Quarter by arrangement. Pr., VM 200 and VM 414.
Microbial classification, identification, and concepts pertaining to international rules of nomenclature.
609. Clinical Mycology (5). Lec. 2, Lab. 6. Any quarter by arrangement. Pr., permission of the instructor and acceptable courses in bacteriology.
Methods and techniques used in isolating and propagating yeasts, molds and actinomycetes pathogenic for animals. Laboratory diagnosis of fungus infections in animals.
- 611-12. Advanced Pathology (5-5). Lec. 2, Lab. 6. Any quarter by arrangement. Pr., VM 453 or equivalent.
A comprehensive study of gross and microscopic lesions of animal diseases.
615. Oncology (5). Lec. 1, Lab. 8. Pr., VM 465. Any quarter by arrangement.
The gross and microscopic pathology of the neoplasms of the domestic animals.

616. **Histochemistry** (5). Lec. 2, Lab. 6. Any quarter by arrangement. Pr., CH 419, VM 418, VM 460 or ZY 308 or equivalent.
Evaluation and application of histochemical methods in the localization of cellular constituents.
617. **Veterinary Protozoology** (5). Lec. 3, Lab. 4. Any quarter by arrangement. Pr., VM 458 or ZY 411 or equivalent.
Detailed study of selected diseases of veterinary importance caused by protozoan parasites.
- 618-619. **Veterinary Helminthology** (5-5). Lec. 3, Lab. 4. Any quarter by arrangement. Pr., VM 458 or ZY 411 or equivalent.
Detailed study of selected diseases of veterinary importance caused by metazoan parasites.
620. **Pathology of Parasitic Diseases** (5). Lec. 2, Lab. 6. Any quarter by arrangement. Pr., VM 453 and 458 or equivalent.
A detailed study of the pathology of parasitic diseases of veterinary importance.
- 621-22. **Advanced Anatomy** (5-5). Lec. 2, Lab. 9. Pr., permission of instructor. Any quarter by arrangement.
A. Cardio-vascular Anatomy. B. Anatomy of the Uro-genital System. C. Neuroanatomy. D. The Anatomy of the Locomotor System, and E. The Anatomy of the Special Senses.
624. **Experimental Neuroanatomy** (5). Lec. 2, Lab. 9. Pr., VM 621-622 (C) Neuroanatomy. Any quarter by arrangement.
Results of especially oriented experimental lesions of the central nervous system employing the Horsley-Clark stereotaxic instrument.
- 625-26. **Advanced Histology of Domestic Animals** (5-5). Lec. 2, Lab. 9. Any quarter by arrangement.
Special phases of the microscopic structure of animal tissues and organs.
631. **Advanced Pathological Physiology** (5). Any quarter by arrangement. Pr., permission of the instructor and acceptable courses in physiology.
The physiological response of the body to disease. Diseases discussed will be those of the liver, kidney and digestive systems.
632. **Advanced Pathological Physiology** (5). Lec. 4, Lab. 3. Any quarter by arrangement. Pr., permission of the instructor.
Physiological explanation of abnormalities of the reproductive and endocrine systems.
633. **Advanced Pathological Physiology** (5). Lec. 4, Lab. 3. Any quarter by arrangement. Pr., permission of instructor.
Abnormalities of the nervous system which lend themselves to a physiological explanation.
- 635-36. **Advanced Veterinary Pharmacology** (5-5). Lec. 3, Lab. 4. Any quarter by arrangement. Pr., VM 436, VM 437, VM 438.
Pharmacology of some of the more important drugs used in veterinary medicine. In the laboratory, students will have an opportunity to determine the pharmacology of the drugs on the horse, cow, pig and dog.
638. **Digestive Processes in Domestic Mammals** (5). Any quarter by arrangement. Pr., VM 421 or its equivalent.
Enzymatic and bacterial digestion as well as the motility of the gastro-intestinal tract in farm animals.
639. **Small Animal Nutrition** (5). Lec. 4, Lab. 3. Any quarter by arrangement. Pr., permission of the instructor and acceptable courses in physiology.
Requirement of amino acids, fats, carbohydrates, minerals and vitamins for dogs, cats and other small animals. Nutritional antagonists and symptoms of nutritional deficiencies in the animals.
643. **Veterinary Radiation Biology** (5). Lec. 4, Lab. 3. Any quarter by arrangement. Pr., permission of the instructor and acceptable courses in chemistry and animal physiology.
Instruments used for radiation detection, isotope techniques, and diagnostic tests used in animals, and the effects of radiation on animal tissues. Isotopes will be primarily gamma emitters.
645. **Electrocardiology and Blood Vascular Physiology** (5). Any quarter by arrangement. Pr., permission of instructor and acceptable courses in physiology.
Physiology of the blood vascular system and the advanced techniques used in electrocardiology.
647. **Canine Neurosurgery** (5). Lec. 2, Lab. 6. Any quarter by arrangement. Pr., permission of the instructor.
Applied anatomy, physiology, physical and radiographic diagnosis, and surgical correction of lesions (especially those of traumatic origin) affecting the nervous system of the dog.
- 651-52. **Advanced Large Animal Surgery** (5-5). Lec. 1, Lab. 8. Any quarter by arrangement.
Research in surgery. Advanced techniques for surgical procedures in domestic animals.

- 654-55. Advanced Large Animal Medicine (5-5). Lec. 1, Lab. 8. Any quarter by arrangement.
Special study of the causes, methods of diagnosis, treatment and methods of control and eradication of selected non-surgical diseases of domestic animals.
- 657-58. Breeding Diseases of Animals (5-5). Any quarter by arrangement.
Graduate study of fertility in domesticated animals, but particularly, investigation into the etiology, pathogenesis, and treatment of sterility and impaired fertility. Diseases of pregnancy and parturition are also included.
660. Advanced Small Animal Surgery (5). Lec. 1, Lab. 10. Any quarter by arrangement.
Techniques in general small animal surgery.
662. Advanced Small Animal Orthopedic Surgery (5). Lec. 1, Lab. 10. Any quarter by arrangement.
New techniques in general orthopedic surgery.
663. Advanced Small Animal Eye Surgery (5). Lec. 1, Lab. 10. Any quarter by arrangement.
New techniques in eye surgery.
- 664-65. Advanced Small Animal Medicine (5-5). Lec. 1, Lab. 10. Any quarter by arrangement.
Causes, methods of diagnosis, treatment and control of non-surgical diseases of small animals.
666. Advanced Canine Neurology (5). Lec. 3, Lab. 6. Any quarter by arrangement.
Etiology of diagnosis, treatment and control of neurological diseases of the dog.
667. Normal Radiological Anatomy (5). Lec. 4, Lab. 2. Any quarter by arrangement.
Normal structure, size and position of the various organs as they appear on flat and contrast radiographs.
668. Advanced Radiology (5). Lec. 1, Lab. 8. Any quarter by arrangement.
Advanced radiographic techniques including fluoroscopy, uses of contrast mediums, and the principles of image intensification and cineradiography.
669. Radiological Interpretations (5). Lec. 1, Lab. 8. Any quarter by arrangement.
Advanced study of radiological interpretation of pathological lesions of domestic animals.
671. Small Animal Cardiovascular Surgery (5). Lec. 1, Lab. 10. Any quarter by arrangement.
Application of accepted, as well as the recently developed techniques of cardiovascular surgery.
696. Seminar (0). Non-credit course required of all graduate students in Veterinary Medicine.
Meets regularly at scheduled intervals each year during Summer Quarter.
698. Research Problems (2 to 5). (Credit to be arranged.)
699. Research and Thesis. (Credit to be arranged.)

Zoology-Entomology (ZY)

*Professors Arant, Blake, Dendy, Dust, K. L. Hays, J. M. Lawrence,
Ottis, Pearson, and Swingle*

*Research Lecturers Davis, Frandsen, Isenstein, and Porter^a
Associate Professors Allison, Bass, Berger, Cunningham, Hyche,
Ivey, Mount, Moss, Prather, and Shell*

*Assistant Professors Boyd, Canerday, Dixon, Dobie, Estes, Gilliland,
Greene, D. Hays, Kouskolekas, F. Lawrence, Mason,
Rogers, Smitherman, and Watson*

Adjunct Assistant Professors Ramsey and Speake

Visiting Assistant Professor Fijian

Instructors Boozer, Folkerts, Johnson, and McCutchen

100. Zoological Orientation (0). Lec. 1. Fall.
Historical and current concepts embodied in various disciplines of the zoological sciences.
101. General Zoology (5). Lec. 4, Lab. 2. All quarters.
Principles of animal biology emphasizing metabolism, growth, reproduction, and inheritance; structure, habit, function, distribution, and economic importance of non-chordate animals.

^a On leave.

- 102. General Zoology (5). Lec. 4, Lab. 2. Pr., ZY 101. All quarters.**
Structure, habits, development, function, distribution, heredity, and economic importance of chordate animals.
- 204. Insects (3). General elective.**
Life processes, occurrence, and importance of insects. (May not be taken for credit by students who have already earned credit in a more advanced course in entomology.)
- 205. Wildlife Conservation (3). Fall. General elective.**
Conservation and natural history of important wildlife animals, especially Alabama fish, amphibians, reptiles, birds and mammals. Some field trips may be required, as substitute for part of the scheduled lectures. (May not be taken for credit by students who have already earned credit in more advanced wildlife courses.)
- 206. Conservation in the United States (3). Winter, Spring, Summer. General elective.**
Basic facts essential to an understanding of current problems pertaining to the conservation of our rapidly depleting natural resources such as soil, water, minerals, forest, and wildlife. Especially planned for elementary and high school teachers.
- 207. Birds (3). Lec. 3. Fall, Summer. General elective.**
Birds in relation to agriculture and game management, recognition of various species as to flight, color markings, songs, and feeding habits. (May not be taken for credit by students who have already earned credit in ZY 422.)
- 210. Fish Culture (3). Lec. 3. Winter. General elective.**
Construction and management of ponds, and the principles underlying fish production; also fishing methods, bait production, and the identification of the more common sport fish. (May not be taken for credit by students who have already earned credit in a more advanced course in fisheries.)
- 214. Vertebrate Physiology and Anatomy (5). Lec. 4, Lab. 3. Fall. Pr., ZY 102.**
Function and structure of the organ systems of the vertebrate. Aimed primarily to fill the needs of students in the School of Education. Cannot be used as a prerequisite to ZY 424.
- 300. Genetics (5). Lec. 4, Lab. 3. All quarters. Pr., ZY 101-2 or BY 101-2 and MH 107, or equivalent.**
Basic genetic principles, theoretical basis for genetic systems, and modern areas of research. Laboratory work emphasizes experiments with the fly, *Drosophila*.
- 301. Comparative Anatomy (5). Lec. 3, Lab. 6. All quarters. Pr., ZY 101-2.**
Comparisons of the systems of the vertebrates.
- 302. Vertebrate Embryology (5). Lec. 3, Lab. 6. Fall, Winter, Spring. Pr., ZY 101-2.**
Consideration of the details of fertilization, cleavage, morphogenesis, and organogenesis of the amphioxus, frog, chick, pig, and human from a descriptive and analytical viewpoint. Laboratory work will consist of prepared material supplemented with available living material.
- 304. General Entomology (5). Lec. 4, Lab. 3. Fall, Spring, Summer. Pr., ZY 101-2.**
General characteristics and habits of the orders and families of the Class Insects.
- 305. Forest Entomology (5). Lec. 4, Lab. 2. Spring. Pr., ZY 101.**
Principles of entomology in relation to insects of forests and forest products; recognition, life histories, and control of major insects of forests.
- 306. General Animal Ecology (5). Lec. 4, Lab. 3. Fall, Spring. Pr., 10 hours of biology or permission of instructor.**
The physical and biotic environments and the interactions of these factors with animals. The organization and functions of communities and populations.
- 308. Micrology (5). Lec. 3, Lab. 6. Fall, Winter, Spring. Pr., ZY 102.**
Basic processes and principles of micrology. Laboratory methods of fixation, embedding, sectioning, coloring, and mounting of tissues of vertebrate and invertebrate animals.
- 312. Practical Fish Culture (5). As arranged.**
Credit will be arranged for 3 months work in a state or federal hatchery or in an approved commercial hatchery or on other phases of fish culture.
- 326. Wildlife Biology (5). Lec. 3, Lab. 6. Winter. Pr., a course in ecology.**
Basic principles of the ecology of wildlife populations and their relations to natural habitat. Laboratory work will consist of practical exercises designed to acquaint the student with modern methodology and technique in studying wild bird and mammal populations.
- 401. Invertebrate Zoology (5). Lec. 3, Lab. 6. Fall, Winter. Pr., ZY 101-2 and junior standing.**
Biology, taxonomy, and ecology of invertebrate animals.
- 402. Economic Entomology (5). Lec. 4, Lab. 3. Fall, Spring, Summer. Pr., junior standing.**
Consideration of the biological aspects, life histories, and control of insects.

404. Medical Entomology (5). Lec. 4, Lab. 3. Spring. Pr., ZY 304 and junior standing.
Insects, mites, and ticks of parasitological or medical importance to man. Emphasis placed on the role of arthropods in transmission of protozoan and other diseases and prevention of these diseases by controlling their arthropod vectors.
405. Forest Insects (5). Lec. 4, Lab. 3. Fall. Pr., ZY 304, 305, or 402 and junior standing.
Principal insects of forests and forest products; their importance, taxonomy, bionomics, and control. Emphasis will be placed on life histories and habits, identification by morphological characteristics and type of damage, and control by chemical, biological, and cultural or forest-management practices.
406. Bee Culture (3). Lec. 2, Lab. 3. Spring. Pr., ZY 101 and junior standing.
Manipulation and production of bees and honey, and a consideration of bee diseases.
407. General Insect Morphology (5). Lec. 3, Lab. 6. Spring. Pr., ZY 304 and junior standing.
Comparative external anatomy and generalized internal structures of insects; characteristics used in taxonomy will be emphasized.
409. Histology (5). Lec. 3, Lab. 6. Spring, Summer. Pr., ZY 102 and junior standing.
Morphology, histogenesis, regeneration and repair, and classification of tissues; arrangement of tissues in organs and systems of vertebrate animals.
410. Systematic Entomology (5). Lec. 2, Lab. 6. Winter. Pr., ZY 304 and junior standing.
Principles of systematics and identification of insects through orders, families, genera, and species.
411. General Parasitology (5). Lec. 3, Lab. 6. Fall, Winter, Summer. Pr., ZY 101-2 and junior standing.
Origin, adaptations, physiology, and ecology of parasites. Identification and life histories of representative parasitic protozoa, helminths, and arthropods with emphasis on host-parasite relationships. Techniques of examining animals for the presence of parasites and the proper preparation of such collections for study.
414. Aquatic Insect Taxonomy (3). Lec. 1, Lab. 6. Summer, even years. Pr., ZY 304 and junior standing.
Collection and identification of common aquatic insects, with emphasis on the immature forms.
415. Limnology (5). Lec. 3, Lab. 6. Spring. Pr., CH 104, PS 205, ZY 101-2, and junior standing.
Biological, chemical, and physical factors affecting aquatic life.
416. Biological Productivity and Water Quality (3). Lec. 1, Lab. 6. Fall. Pr., CH 208 or consent of instructor and junior standing.
Biological and chemical measures of water quality in streams and impoundments as related to fisheries. Effects of pollution, fertilization, and feeding of fish upon water quality.
- 418-19. Experimental Heredity (3-3). Lec. 1, Lab. 4. Fall, Winter. Pr., ZY 300 and junior standing.
A two-quarter sequence in advanced experimental methods in genetics. Research problems utilizing various laboratory organisms will extend throughout the two quarters.
420. Human Heredity (5). Lec. 5. Spring. Pr., ZY 300, CH 208, and junior standing.
Effects and normal and abnormal chromosome complements, the biological interaction of genes, and the effects of mutation and changes in gene frequency on human populations; problems in small sample analyses, biochemical screening of human "carriers," and the prospects for genetic engineering.
421. Vertebrate Zoology I (5). Lec. 3, Lab. 6. Spring. Pr., ZY 102 and junior standing.
Taxonomy, ecology, and evolution of fishes, amphibians, and reptiles.
422. Vertebrate Zoology II (5). Lec. 3, Lab. 6. Fall, Summer. Pr., ZY 102 and junior standing.
Basic taxonomy, ecology, evolution, and some biological principles of birds and mammals. Laboratory studies in radio-telemetry, bioacoustics, and population dynamics are used in addition to classical vertebrate zoology exercises.
424. Animal Physiology (5). Lec. 4, Lab. 3. Fall, Winter, Spring. Pr., ZY 301 and junior standing.
Systematic study of the physiology of the nervous system, special senses, circulation, respiration, digestion, kidney function, hormonal control, and reproduction. An effort is made to acquaint the student with methods of experimentation as a means for the direct acquisition of physiological facts.

425. Forest Wildlife Management (3). Lec. 3. Spring. Pr., FY 420 or permission of instructor.
Principles of wildlife management as applied to forest properties. Restricted to students in forestry.
426. Principles of Game Management (5). Lec. 4, Lab. 3. Fall. Pr., ZY 326 and junior standing.
Fundamentals of game management theory, application, and administration.
427. Wildlife Habitat Analysis (3). Lec. 1, Lab. 6. Summer. Pr., ZY 426, BY 406, and junior standing.
Practical exercises in vegetation analysis, utilization studies, aerial photograph interpretation, and cover type mapping.
428. Hatchery Management (5). Lec. 3, Lab. 4. Spring. Pr., ZY 102 and junior standing.
Operation of hatcheries for production of cold- and warm-water game fish and bait minnows; care of brood fish; methods of stocking, fertilizing, supplementary feeding, and controlling weeds; transportation of fish; control of parasites; and related hatchery problems.
429. Quantitative Genetics (5). Lec. 4, Lab. 3. Spring 1968. Pr., ZY 300, BY 401 or permission of instructor.
The theory of Mendelian inheritance extended to properties of populations dependent on segregation of genes at many loci.
431. Ecology and Taxonomy of Animals (5). Lec. 3, Lab. 6. Summer. Pr., teaching experience and consent of instructor.
Principles of ecology and taxonomy using field studies and museum materials. Field trips to study ecological habitats. Restricted to participants in the NSF Summer Institute of Biology. A separate section for other qualified students will be offered upon sufficient demand.
432. Advanced Animal Biology (5). Lec. 3, Lab. 4. Summer. Pr., teaching experience and consent of instructor.
Principles of zoology with emphasis on morphology and physiology of the mammalian systems. Restricted to participants in the NSF Summer Institute of Biology, but will be offered in a separate section to other qualified students upon sufficient demand.
435. Marine Biology (3). Fall. Pr., acceptable chemistry background, ZY 101-2 or equivalent, and junior standing.
Introduction to the physical, chemical, and biological characteristics of the marine environment.
436. Management of Small Impoundments (3). Lec. 1, Lab. 6. Summer. Pr., ZY 102 and junior standing.
Consideration of the species of fish used in management of small impoundments, species balance, population balance analysis, methods of correcting unbalanced conditions, renovation of old impoundments, and related problems of water management.
437. Fisheries Biology (3). Pr., ZY 102 and junior standing.
An introduction to the study of vital statistics of fish populations.
440. Physical Marine Geology (4½). Lec. 2, Lab. 5. Summer only. Pr., physical and historical geology, mineralogy, and junior standing.
General introduction to the physical processes on the shores of Mississippi Sound, emphasizing the erosional and depositional effects of waves and currents. Beaches and spits periodically surveyed to measure changes in shape, height, cross-section, lateral shift, and particle distribution and to observe growth and destruction of bars, cusps, spits and tide-pools. Offered only at the Gulf Coast Research Laboratory, Ocean Springs, Mississippi.
441. Chemical Marine Geology (4½). Lec. 2, Lab. 5. Summer only. Pr., physical and historical geology, mineralogy, CH 105 and CH 206, and junior standing.
Supervised research in the chemistry of the waters of Mississippi Sound and geochemistry of the bottoms. Lateral, vertical and tidal changes in water composition. Analyses of core samples taken from different environments: bayous, mudflats, bars, oyster reefs, bays, tidal channels and sandy shelves. Offered only at the Gulf Coast Research Laboratory, Ocean Springs, Mississippi.
442. Marine Invertebrate Zoology (9). Lec. 5, Lab. 12. Summer only. Pr., 18 hours of biology including ZY 101-2, and junior standing.
A general study of the anatomy, life histories, distributions, and phylogenetic relationships of all marine phyla below the chordates. Laboratory and field work included. Offered only at the Gulf Coast Research Laboratory, Ocean Springs, Mississippi.
443. Marine Vertebrate Zoology and Ichthyology (9). Lec. 5, Lab. 12. Summer only. Pr., 18 hours of biology including ZY 101-2 and junior standing.
A general study of the marine chordata, including lower groups and the mammals and birds, with most emphasis on the fishes. Offered only at the Gulf Coast Research Laboratory, Ocean Springs, Mississippi.

444. **Marine Fisheries Biology** (6). Lec. 3, Lab. 9. Summer only. Pr., 25 hours of zoology including ZY 421, and junior standing. Survey of the principles of the subject beginning with a study of fishery landing statistics of the United States followed by other areas of the earth. The classic theory will be examined and statistical applications will be made to various Gulf of Mexico fisheries. Offered only at the Gulf Coast Research Laboratory, Ocean Springs, Mississippi.
445. **Fish Parasites** (3). Lec. 1, Lab. 6. Winter. Pr., ZY 411 and junior standing. The external and internal parasites of fishes, their identification, and control; laboratory studies on life histories and epidemiology of parasite populations in ponds and impoundments.
446. **Fish Diseases** (3). Lec. 1, Lab. 6. Spring. Pr., VM 200 and junior standing. Bacterial and viral diseases of fishes, their isolation, culture identification, and control.
498. **Special Problems** (1-3). Pr., senior standing. A. Zoology; B. Entomology; C. Fisheries Management; D. Wildlife Management. A student can register for a total of not more than three hours credit.

GRADUATE COURSES

601. **Insect Morphology** (3). Lec. 1, Lab. 6. Fall. Pr., ZY 407. Detailed studies of the internal structures of insects.
602. **Advanced Insect Taxonomy** (5). Lec. 1, Lab. 8. Summer, odd years. Pr., ZY 410. Principles of systematics including phylogeny with emphasis on a particular group of insects which the student may choose.
603. **Insect Physiology** (5). Lec. 3, Lab. 6. Spring, even years. Pr., ZY 424 and ZY 601. General and comparative physiology of the organ systems of insects. A minimum of two literature reviews will be made by each student during the quarter.
604. **Insect Toxicology** (5). Lec. 4, Lab. 3. Winter. Toxic action of insecticides; analysis, preparation and use of insecticides; spray residues in relation to health; research methods in insect toxicology.
605. **Ornithology** (5). Lec. 3, Lab. 6. Spring. Pr., ZY 422. Ecology and behavior of birds.
606. **Mammalogy** (5). Lec. 3, Lab. 6. Winter. Pr., ZY 422. Taxonomy, ecology, and behavior of mammals.
607. **Farm Game Management** (5). Lec. 3, Lab. 6. Fall. Pr., ZY 426. For graduate students majoring in Game Management or Fisheries Management. Application of game management theories, techniques, and administration with special emphasis on farm game species.
608. **Forest and Range Game Management** (5). Lec. 3, Lab. 6. Winter. Pr., ZY 426. For graduate students majoring in Game Management or Fisheries Management. Application of game management theories, techniques, and administration with special reference to forest and range game.
609. **Advanced Applied Entomology** (5). Lec. 4, Lab. 3. Spring. Pr., ZY 402. Integrated control of the principal insects by environmental, biological, genetic, chemical, and legal means.
610. **Immature Forms of Insects** (5). Lec. 2, Lab. 6. Winter. Pr., ZY 410. Structure and identification of immature forms of insects; methods of collecting and preserving; development and use of keys for classifying immature insects.
611. **Advanced Insect Morphology and Embryology** (3). Lec. 1, Lab. 6. Winter. Pr., ZY 601. Insect morphology in relation to comparative embryological developments of insects.
612. **Advanced Insect Toxicology** (5). Lec. 4, Lab. 3. Spring, odd years. Pr., ZY 604. Mode of action, mode of entry, relation of chemical structure to toxicity, and precision methods of determination of insecticides; recent developments in the field of insecticide chemistry.
613. **Insect Pathology** (5). Lec. 3, Lab. 4. Fall. Pr., VM 200, ZY 402, and consent of instructor. The microorganisms associated with diseases in insects and their pathological effects on insects and insect populations.
614. **Physiology of the Cell** (3). Winter. Pr., ZY 424 and Organic Chemistry. Examination of the basic physiological processes at the cellular level with the tools and approaches of physical science.
615. **Advanced Fisheries Biology** (3). Lec. 2, Lab. 3. Winter. Pr., ZY 437. Concepts of population dynamics, yield prediction equations, and the interaction of reproduction, growth, and mortality in fish populations.

616. Systematic Ichthyology (5). Lec. 1, Lab. 8. Spring. Pr., ZY 421. Principles of classification and the construction and utilization of keys for the identification of fishes.
617. Advanced Limnology (3). Lec. 1, Lab. 6. Winter. Pr., ZY 415. Principles and methods employed in modern limnological research.
618. Aquaculture (3). Winter. Pr., ZY 416. Principles underlying aquatic productivity and levels of management as demonstrated by domestic and foreign lotic and lacustrine cultures of fish and other aquatic crops.
621. Management of Streams and Large Impoundments (5). Lec. 4, Lab. 3. Summer. Pr., ZY 437 or its equivalent. Fish populations of streams and large impoundments and a consideration of methods for the management of these populations.
622. History and Literature of Zoology (4). Lec. 3, Lab. 3. Winter. Pr., graduate standing. A historical review of the classical authors and great works in zoological literature. Laboratory will concentrate on examining and learning to use journals, abstracts, and reference materials in the library.
623. Organic Evolution (5). Fall. Pr., ZY 430 or ZY 300. Evolutionary principles as illustrated by the various biological disciplines, particularly genetics, paleontology, zoogeography, and systematics in general.
624. Neurobiology (5). Lec. 3, Lab. 6. Winter. Pr., ZY 424. Morphology, physiology, and evolution of the central, autonomic, and neurohormonal systems of the vertebrate.
627. Immunology and Physiology of Parasites (5). Lec. 3, Lab. 6. Winter, even years. Pr., ZY 411, VM 200, ZY 424, and consent of instructor. Immunity mechanisms to infections of protozoan and helminth parasites. Chemical physiology of host-parasite relationship to include nutrition, metabolism, toxicity, and chemotherapy.
628. Endocrinology (5). Spring. Pr., ZY 424 and biochemistry. A comprehensive treatment of the classical and modern literature of endocrinology for the qualified student in animal biology.
629. Advanced Quantitative Genetics (5). Lec. 4, Lab. 2. Summer 1968. Pr., ZY 429 or equivalent. Principles of quantitative genetics applied to breeding, emphasizing difficulties encountered in commercial breeding programs.
630. Advanced Genetics (5). Winter. Pr., ZY 300 and BY 401. Non-Mendelian hereditary systems; regulation of gene action as it influences growth, differentiation, and development; the use of statistics as an investigational tool; and the status of contemporary genetic research.
632. Helminthology (5). Lec. 3, Lab. 6. Spring. Pr., ZY 411. Advanced studies of the morphology, physiology, life cycles, and host-parasite relationships of helminths. Opportunity for making extensive literature studies and collections of the parasites of a particular group of animals in which the student is most interested.
634. Protozoology (5). Lec 3, Lab. 6. Winter, odd years. Pr., ZY 411. Free-living and parasitic protozoa important to agriculture, wildlife, and man. Morphology, physiology, reproduction, ecology, and life histories of parasitic forms will be emphasized.
635. Furbearer and Waterfowl Management (5). Lec. 3, Lab. 4. Winter. Pr., ZY 426. For graduate students with a major or minor in wildlife management. A study of furbearer and waterfowl resources. Emphasis is placed on problems of management and utilization.
636. Ecology and Animal Populations (3). Fall. Pr., ZY 306. An investigation of the balance of nature, population cycles, natural regulation of animal numbers, competition, epizootics, and the compensatory adjustments of populations to changes in the environment.
637. Herpetology (5). Lec. 1, Lab. 8. Spring. Pr., ZY 421. A study of the morphology, taxonomy, ecology, and behavior of amphibians and reptiles. Laboratory collecting, preserving, and identification of local specimens will be an important consideration.
638. Experimental Endocrinology (5). Spring. Pr., ZY 628 or taken concurrently. Laboratory studies of endocrine control mechanisms utilizing surgical, bioassay, biochemical assay, histochemical, and autoradiographic methods and techniques.
640. Nematology (3). Lec. 2, Lab. 3. Spring. Pr., ZY 401 or 411. Study and identification of the free-living soil- and aquatic nematodes and of the insect-parasitic nematodes. Detailed consideration of aspects of nematode morphology, reproduction, development, behavior, physiology, and ecology.

641. **Field Entomology (3).** Lec.-Dem. 4. Fall or Spring. Pr., graduate standing. Identification of more important orders, families, and species of insects; a consideration of morphology, physiology, and development of insects; control of major pests. A collection of at least 100 species of economic insects will be required.
642. **Chemical Control of Insects (3).** Lec.-Dem. 4. Winter. Pr., graduate standing. Properties of insecticides, including toxic action in living organisms; major uses and methods of application of formulations; hazards involved in handling insecticides; spray residues in relation to marketability of crops.
643. **Heredity and Evolution (5).** Lec. 5. Summer. Pr., teaching experience and consent of instructor. Basic principles of genetics and contemporary evolutionary theory. Suitable laboratory methods and exercise will be demonstrated and discussed. Restricted to participants in the NSF Summer Institute of Biology, but will be offered in a separate section to other qualified students upon sufficient demand.
693. **Seminar.** (Credit to be arranged.)
697. **Problems in Marine Zoology (4-9).** All year. Pr., ZY 442-3. Supervised research on specific problems in marine zoology for graduates. Offered only at the Gulf Coast Research Laboratory, Ocean Springs, Mississippi.
698. **Special Problems (2-5).** All quarters. A. Zoology; B. Entomology; C. Apiculture; D. Parasitology; E. Physiology; F. Fisheries; G. Wildlife.
699. **Research and Thesis.** (Credit to be arranged.)
799. **Doctoral Research and Dissertation.** (Credit to be arranged.)

Faculty and Staff

1967-68

(The first date after the title indicates the year of first appointment to any position in the institution; the second, the year of appointment to present rank. Effective date of resignation shown only for persons whose names were not carried in a previous catalog.)

GENERAL ADMINISTRATIVE OFFICERS

ANDREWS, WARREN M.	Director of Nuclear Science Center, 1961, 1965
B.S., Auburn University; M.S., Vanderbilt University; M.S., Ph.D., University of California.	
BEAR, ROBERT J.	Comptroller and Assistant Treasurer, 1961
B.S., Cornell University; M.B.A., George Washington University.	
BEARD, G. W.	Director of Athletics, 1937, 1951
B.S., Auburn University.	
BENTLEY, CHARLES S.	Assistant Dean of Student Affairs, 1951, 1965
B.S., M.S., Auburn University.	
BRADLEY, MARY HART	Assistant Dean of Women, 1962, 1963
B.S., M.A., University of Alabama.	
BROWN, MORGAN WITHERILL	Director, Student Health Service, 1950
B.S., University of Alabama; M.D., Tulane School of Medicine.	
CAIN, JOHN LEONARD	Director of Engineering Extension, 1962
B.Ch.E., Georgia Institute of Technology.	
CANTRELL, CLYDE HULL	Professor and Director of Libraries, 1944, 1959
A.B., A.B.L.S., M.A., University of North Carolina; Ph.D., University of Illinois.	
CATER, KATHARINE COOPER	Dean of Women and Social Director, 1946
A.B., Limestone College; M.A., Mercer University; M.S., Syracuse University; Litt.D., Limestone College.	
CLARK, JAMES INGRAHAM	Dean of School of Architecture and Fine Arts, 1967
B.Arch., University of Michigan; M.S., University of Southern California; Ph.D., New York University.	
COKER, SAMUEL TERRY	Dean, School of Pharmacy, 1959
B.S., Auburn University; M.S., Ph.D., Purdue University.	
COLEMAN, MARY E.	Associate Director for Women's Work, Cooperative Extension Service, 1936, 1965
B.S., Auburn University; M.A., Columbia University.	
COX, JULIUS GRADY	Associate Dean of Engineering, 1949, 1967
B.S., M.S., Auburn University; Ph.D., Purdue University.	
DUNLAP, JOHN FRETWELL	Director, Student Financial Aid, 1959, 1962
B.S., Clemson University.	
FARLEY, W. SCOTT	Placement Director, 1964
B.S., Auburn University.	
FISHER, HOMER S., JR.	Associate Registrar, 1963, 1967
B.S., M.B.A., Auburn University.	
FOY, JAMES EDGAR	Dean of Student Affairs, 1950, 1960
A.B., M.A., University of Alabama.	
FUNCHESS, LINWOOD E.	Director of Buildings and Grounds, 1957
B.S., Auburn University; M.S., Cornell University.	
FUNDERBURK, H. HANLY	Assistant Dean of Graduate School, 1967
B.S., M.S., Auburn University; Ph.D., Louisiana State University.	
GARNER, JAMES MONROE, JR.	Radiological Safety Officer, 1966
B.S., Daniel Baker College.	
GREENE, JAMES ETHRIDGE	Dean, Veterinary Medicine, 1937, 1958
D.V.M., M.S., Auburn University.	
GUERIN, WILLIAM H.	Campus Planner and Architect, 1967
B.Arch., University of Florida.	
HAWKINS, HERBERT N.	Director of Admissions, 1962, 1966
B.S., M.S., Auburn University.	

HOBBS, EDWARD H.	<i>Dean of School of Arts and Sciences</i> , 1967
A.B., University of North Carolina; M.A., University of Alabama; Ph.D., Harvard University.	
INGRAM, WILLIAM TRAVIS	<i>Business Manager and Treasurer</i> , 1925, 1953
JONES, RALPH R.	<i>Associate Director of Cooperative Extension Service</i> , 1936, 1962
B.S., Auburn University; M.S., Michigan State University.	
JONSON, WILLIAM CRAWFORD, JR.	<i>Assistant Director, Engineering Experiment Station</i> , 1956, 1967
B.S., U.S. Naval Academy.	
KILLIAN, ALBERT F.	<i>Registrar</i> , 1964, 1966
B.S., M.S., Auburn University.	
LEISCHUCK, GERALD S.	<i>Institutional Research Officer</i> , 1963, 1966
A.B., M.A., Colorado State University; Ed.D., Auburn University.	
LITTLETON, TAYLOR D.	<i>Assistant to Vice President for Academic Affairs</i> , 1967
B.S., M.A., Ph.D., Florida State University.	
MARSHALL, ROBERT B.	<i>Commandant and Professor of Military Science</i> , 1965
B.S., Clemson University; Colonel, U.S. Army.	
PARKER, WILLIAM V.	<i>Dean, Graduate School; Professor of Mathematics</i> , 1950, 1953
A.B., M.A., University of North Carolina; Ph.D., Brown University.	
PIERCE, TRUMAN M.	<i>Dean, School of Education</i> , 1955
Ph.B., Piedmont College; M.A., University of Alabama; Ph.D., Columbia University.	
PUMPHREY, FRED H.	<i>Dean of Engineering and Director of Engineering Experiment Station (P.E.)</i> , 1958
B.A., B.E.E., E.E., D.Sc. (Hon.), Ohio State University.	
REAVES, RAYMOND M.	<i>Assistant to the Director, Field Service, Cooperative Extension Service</i> , 1927, 1962
B.S., Auburn University.	
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WARMAN, JAMES C.	<i>Director of Water Resources Research Institute</i> , 1965
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WEGENER, EDWARD PALMER	<i>Director of Educational Television</i> , 1954
B.S., University of Minnesota.	
WHITE, J. HERBERT	<i>Director of University Relations</i> , 1965
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D.V.M., M.S., Auburn University; Sc.D., Johns Hopkins University.	
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B.S.Art, M.A.Art, Auburn University.	
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 A.B., M.A., Alabama College.
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 B.S., Livingston State College.
- *CREVAR, GEORGE EDWARD *Instructor in Pharmacy*, 1968
 B.S., Fordham University; M.S., University of North Carolina.
- CRISS, ROBERT RANDOLPH *Assistant Professor in School of Business*, 1966
 B.B.S., M.B.A., LL.B., University of Mississippi; C.P.A.
- CROCKER, GEORGE T. *Instructor of Mathematics*, 1967
 B.S., Union University; M.S., Auburn University.
- CUNNINGHAM, HUGH B. *Associate Professor of Zoology and Entomology*, 1951, 1965
 B.S., M.S., Auburn University; Ph.D., University of Illinois.
- CURL, ELROY A. *Professor of Botany and Plant Pathology*, 1954, 1967
 B.S., Louisiana Polytechnic Institute; M.S., University of Arkansas; Ph.D., University of Illinois.
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 Warsaw Diploma; Master in Violin Literature, Florida State University.

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B.S.C.E., M.S.E.M., Ph.D., Virginia Polytechnic Institute.
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B.S., Texas Technological College; M.S., University of Tennessee.
- DARDEN, PAUL A. Associate Professor of Building Technology (P.E.), 1958, 1967
B.Arch., Auburn University.
- *DARON, HARLOW H. Assistant Professor of Animal Science, 1967
B.S., University of Oklahoma; Ph.D., University of Illinois.
- DARWIN, JAMES THOMAS, JR. Assistant Professor of Mathematics, 1963
B.S., Ph.D., University of Texas.
- DAVALOS, RUDY A., JR. Instructor and Assistant Basketball Coach,
Health, Physical Education and Recreation, 1963, 1964
B.S., Southwest Texas State College; M.A., Georgetown College.
- DAVIS, DONALD E. Professor of Botany and Plant Pathology, 1947, 1955
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- DAVIS, TERRY C., JR. Assistant Professor of Botany and Plant Pathology, 1965
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B.A., M.A., Abilene Christian College; Ph.D., Rice University.
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B.S.E.E., M.S., Auburn University.
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A.B., Flora MacDonald College; B.S.L.S., Penobury College; M.S.L.S., University of North Carolina.
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B.S., Presbyterian College; M.A., University of North Carolina; Ph.D., University of Michigan.
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B.S., Abilene Christian College; M.S., Auburn University.
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B.B.C., Auburn University.
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B.S., M.B.A., Auburn University.
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B.S., Middle Tennessee State University; M.A., Ed.D., Peabody College.
- FITZPATRICK, PHILIP M. *Associate Professor of Mathematics*, 1962, 1963
B.S., M.S., Ph.D., University of Oklahoma.
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B.S.E.E., M.S.M.E., Texas A&M University.
- *FOLKEVITS, GEORGE W. *Instructor in Zoology-Entomology*, 1966
B.A., M.A., Southern Illinois University.
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B.S.E.E., University of Mississippi; M.S., Auburn University.
- *FORD, JO L. *Assistant Professor of Mathematics*, 1965
B.S., University of Southwest Louisiana; M.S., Ph.D., Auburn University.
- FORD, RALPH M. *Visiting Assistant Professor of Mathematics*, 1965
B.E.P., M.S., Ph.D., Auburn University.
- FORTENBERRY, CHARLES N. *Head Professor of Political Science*, 1968
B.A., M.A., University of Mississippi; Ph.D., University of Illinois.
- FORSYTHE, BENJAMIN C. *Instructor in Physics*, 1966
B.A., Toronto University.
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B.A., Birmingham-Southern College; M.A., Ph.D., Vanderbilt University.
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A.B., Ohio Northern University; M.A., Western Kentucky State University; Ph.D., Ohio State University.
- FRANCIS, WILLIAM HUGH *Head Professor of Engineering Graphics (P.E.)*, 1931, 1959
B.S., M.S., Auburn University.
- FREEMAN, ROBERT C. *Assistant Football Coach*, 1964
B.S., Auburn University.
- *FRENCH, FRANCES C. *Instructor in Sociology*, 1960
B.A., M.S., Louisiana State University.
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B.S., M.S., Ph.D., Louisiana State University.
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B. of Arch., Auburn University.
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B.S., M.S., Auburn University.
- FROMHOLD, A. T., JR. *Associate Research Professor of Physics*, 1965
B.S., M.S., Auburn University; Ph.D., Cornell University.
- FUGLER, CHARLES McGHEE *Instructor in Foreign Languages*, 1965
B.S., Tulane University; M.S., Louisiana State University; Ph.D., Auburn University.
- FUNDERBURK, HENRY H., JR. *Alumni Associate Professor of Botany and Plant Pathology*, 1961, 1966
B.S., M.S., Auburn University; Ph.D., Louisiana State University.
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B.S., Duke University; M.B.A., Ohio State University; Major, U.S. Air Force.
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B.S., M.S., University of Richmond; Ph.D., University of Virginia.
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B.S., Auburn University; A.M.L.S., University of Michigan.
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D.V.M., M.S., Cornell University.
- GILL, WILLIAM ROBERT *Research Lecturer in Agricultural Engineering*, 1957
B.S., Pennsylvania State University; M.S., University of Hawaii; Ph.D., Cornell University.
- GILLILAND, FLOYD R., JR. *Assistant Professor of Zoology-Entomology*, 1967
B.S., Arkansas Polytechnic College; M.S., University of Arkansas; Ph.D., Mississippi State University.
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B.S., Tennessee Technological University; M.S., University of Tennessee.
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B.S., Austin Peay State College; M.S., Auburn University; Ph.D., Texas A&M University.
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F.T.C.L., L.Mus.T.C.L., L.R.A.M., L.T.C.L. (London, England).
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B.S., M.S., Mississippi State University.
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B.S., M.S., Auburn University.
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B.S., University of Florida; M.S., George Washington University.
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B.S., M.Ed., Auburn University.
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B.S., M.S., Ph.D., Ohio State University.
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B.E., M.E.E., Auburn University; Ph.D., Technische Hochschule, Stuttgart.
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B.A., Baylor University; M.Ed., University of Florida; Ph.D., Florida State University.
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B.A., Ouachita University; M.A., University of Arkansas.
- *GREENE, GEORGE N. *Assistant Professor of Zoology-Entomology*, 1964
B.A., Rice University; M.S., University of Michigan; Ph.D., Auburn University.
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B.S., Eastern Illinois University; M.S., Ph.D., University of Illinois.
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B.A., University of Illinois; M.S., Medical College of Georgia.
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B.S., M.S., Ph.D., Iowa State University.
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B.S., Middle Tennessee State University; M.A., Peabody College.
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B.S., Troy State College; M.A., Peabody College.
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B.T.C., Auburn University; M.S.T.C., Clemson University; Ph.D., Victoria University (England).
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B.A., Duke University; M.A., Auburn University.
- HAMILTON, JOHN WARD *Associate Professor, Foreign Languages*, 1956
A.A., B.A., M.A., University of Florida; Doctor en fil. y let., University de Salamanca (Spain).
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B.S., M.S., Ph.D., Auburn University.
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B.S., M.S., Western New Mexico University; Ph.D., State University of Iowa.
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B.S., U.S. Naval Academy.
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B.S., High Point College; M.S., University of North Carolina; M.B.A., University of Texas; C.P.A., (North Carolina); C.L.U., American College of Life Underwriters; C.P.C.U., American Institute for Property and Liability Underwriters, Inc.

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- *SPAULDING, JOHN E. *Instructor in Microbiology*, 1965
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- SPEARS, WILLIAM D. *Head Professor of Psychology*, 1961
A.B., M.Ed., University of Chattanooga; Ph.D., Peabody College.

* Temporary.

** On leave.

SPEER, WILLIAM ARTHUR	<i>Professor of Architecture</i> , 1962, 1967 B.S.Arch., Clemson University; M.Arch., Rensselaer Polytechnic Institute.
SPENCER, GARY DALE	<i>Assistant Professor of Education; Director</i> B.S., M.A., Ed.D., Arizona State University. <i>Reading Clinic</i> , 1963
SPENCER, LILLY HESTER	<i>Associate Professor of Home Economics</i> , 1928, 1935 B.S., M.S., Oklahoma State University.
SQUIRES, C. D.	<i>Associate Professor of Animal Science</i> , 1950 B.S., M.A., Ph.D., University of Missouri.
STALNAKER, CARROL C.	<i>Associate Professor in School of Business</i> , 1937, 1946 B.A., State College of Iowa; M.A., University of Iowa.
STANALAND, EUGENE E.	<i>Assistant Professor in School of Business</i> , 1960, 1964 B.S., Huntingdon College; M.B.A., University of Alabama.
STEELE, H. ELLSWORTH	<i>Research Professor in School of Business</i> , 1949, 1951 B.A., M.A., University of Nebraska; Ph.D., Ohio State University.
STEPHENSON, JOSEPH	<i>Assistant Professor of Music</i> , 1967 B.M., M.M., Peabody Conservatory.
STEVENS, FRANK J.	<i>Professor of Chemistry</i> , 1947, 1959 B.S., University of Illinois; Ph.D., Iowa State University.
*STEWART, CHARLES DAVID	<i>Instructor in Engineering Graphics</i> , 1959, 1965 B.S., University of Alabama; B.S.A.E., Auburn University.
STIMPSON, RITCHIE P.	<i>Professor of Aerospace Studies</i> , Air Force ROTC, 1967 B.S., Furman University; Colonel, U.S. Air Force.
STOKES, CHARLIE MACK	<i>Associate Professor of Agricultural</i> B.S., M.S., Auburn University. <i>Engineering (P.E.)</i> , 1937, 1962
STOREY, BRIT ALLAN	<i>Instructor of History</i> , 1967 B.A., Adams State College; M.A., University of Kentucky.
STREET, DONALD R.	<i>Assistant Professor in School of Business</i> , 1965 B.S., M.S., Auburn University; Ph.D., Pennsylvania State University.
**STRENGTH, D. RALPH	<i>Alumni Professor of Animal Science</i> , 1961, 1967 B.S., M.S., Auburn University; Ph.D., Cornell University.
STROUD, OXFORD	<i>Assistant Professor of English</i> , 1950, 1957 B.S., M.A., Auburn University.
STURKIE, D. G.	<i>Professor of Agronomy and Soils</i> , 1925, 1942 B.S., Auburn University; M.S., Iowa State University; Ph.D., Michigan State University.
SUMPTER, GLENN ROY, III	<i>Assistant Professor in Home Economics</i> , 1967 B.A., Bob Jones University; M.S., Ph.D., Florida State University.
SWARTHOUT, CHARLENE	<i>Associate Professor in Learning Resources</i> , 1967 B.S., M.S., Ed.D., Wayne State University.
SWEENEY, J. B. JR.	<i>Professor of Naval Science</i> , 1966 B.A., Amherst College; LL.B., University of Maryland; Captain, U.S. Navy.
SWINGLE, HOMER SCOTT	<i>Professor of Zoology-Entomology</i> , 1929, 1939 B.S., M.S., D.Sc. (Hon.), Ohio State University.
SWINSON, WELDON FRANK	<i>Associate Professor of Mechanical Engineering</i> , 1964 B.A., Rice University; B.S.M.E., Texas Technological College; M.S.M.E., Texas A&M University; Ph.D., University of Illinois.
SYKES, MALTBY	<i>Professor of Art</i> , 1942, 1954 Studied with Wayman Adams, Diego Rivera, John Sloan, George C. Miller, Fernand Leger, Stanley William Hayter, and Andre Lhote.
*SZILASSY, CLARA I.	<i>Instructor in Learning Resources Center</i> , 1962, 1965 L.L.D., University of Pecs (Hungary).
SZILASSY, SANDOR	<i>Head, Science and Technology Division and</i> <i>Associate Professor (Library)</i> , 1961, 1965 L.L.D., University of Budapest; M.A.L.S., Indiana University.
TAMELYN, JOHN W.	<i>Professor of Music</i> , 1948, 1962 B.S., B.S., Auburn University; M.Mus., Ph.D., University of Rochester.
TANGER, GERALD EUGENE	<i>Professor of Mechanical Engineering (P.E.)</i> , 1958, 1960 B.S., South Dakota School of Mines and Technology; M.S., Brown University; Ph.D., Oklahoma State University.
TAUGNER, AGNES B.	<i>Assistant Professor of Art</i> , 1963 B.F.A., M.F.A., University of Illinois.
*TAYLOR, HOWARD M.	<i>Research Lecturer, Agronomy and Soils</i> , 1966 B.S., Texas Technological College; Ph.D., University of California.

^{*} Temporary.^{**} On leave.

- TAYLOR, ZELMA LOWELL, JR. *Assistant Research Professor of Chemical Engineering*, 1962, 1966
B.S.Ch.E., University of Idaho; M.S., Auburn University; Ph.D., University of Florida.
- TEAGUE, WAYNE *Assistant Professor of Educational Administration*, 1963
B.S., M.S., Ed.D., Auburn University.
- TEER, PATRICIA ANNE *Assistant Professor of Pathology and Parasitology*, 1959, 1963
D.V.M., M.S., Auburn University.
- TEGGINS, JOHN E. *Assistant Professor of Chemistry*, 1966
B.S., Sheffield University; A.M., Ph.D., Boston University.
- TERRELL, ALAN R. *Instructor of Mechanical Engineering*, 1966
B.S., M.E., Pennsylvania State University.
- *TERRILL, LAURA LEA *Assistant Professor of Home Economics*, 1967
B.S., Ouachita University; M.S., Pennsylvania State University.
- THAXTON, G. DONALD *Assistant Professor of Physics*, 1966
B.S., University of Richmond; Ph.D., University of North Carolina.
- THOMASSON, C. LARRY *Associate Professor of Pharmacy*, 1966
B.S., University of Cincinnati; Ph.D., University of Florida.
- THOMPSON, SIDNEY LEE *Associate Professor of Mathematics*, 1937, 1948
B.S., Birmingham-Southern College; M.S., Tulane University; M.A., University of Michigan.
- THORNTON, ROBERT W. *Associate Professor of Engineering Graphics*, 1966
B.S., Ohio State University; M.A., Colorado State University.
- THURLOW, DONALD L. *Associate Professor of Agronomy and Soils*, 1967
B.S., M.S., Kansas State University; Ph.D., Michigan State University.
- TODD, TERENCE C. *Assistant Professor in Foundations of Education*, 1967
B.S., Ph.D., University of Texas.
- TOWNSEND, JOHN EDWARD *Assistant Professor in Aerospace Engineering*, 1967
A.B., M.A., Bob Jones University; M.S., Purdue University.
- TRANSUE, WILLIAM R. *Assistant Professor of Mathematics*, 1967
A.B., Harvard University; Ph.D., University of Georgia.
- TRUCKS, LOUIS B. *Assistant Professor of Industrial Engineering (P.E.)*, 1964
B.S., Auburn University; M.S., University of Pittsburgh.
- TRUELOVE, BRYAN *Associate Professor of Botany and Plant Pathology*, 1967
B.Sc., Ph.D., University of Sheffield.
- TUCKER, HOWARD F. *Associate Professor of Animal Science*, 1949, 1962
B.S., M.S., Ph.D., Auburn University.
- TURK, WILLIAM BROOKE *Assistant Director of Student Health*, 1965
B.S., Auburn University; M.D., Louisiana State University Medical Center.
- TURNER, A. JACK *Assistant Professor of Psychology*, 1956, 1964
B.S., Auburn University; Ph.D., Florida State University.
- TURNER, LOUISE K. *Assistant Professor of Health, Physical Education
and Recreation*, 1937, 1946
B.A., Southwestern Louisiana University; M.A., M.S., Louisiana State University.
- *TURNER, MAXINE T. *Instructor of English*, 1967
A.B., Huntingdon College; M.A., Auburn University.
- TURNER, OTHEL D. *Dean of School of Business*, 1968
B.A., University of Tulsa; LL.B., University of Arkansas; M.B.A., Ph.D., University of Texas.
- TURNEY, D. M. *Associate Professor of Animal Science*, 1940, 1962
B.S., Auburn University; M.S., University of Illinois.
- UMBACH, ARNOLD W. *Professor of Health, Physical Education and
Recreation*, 1944, 1945
B.S., Southwestern State Teachers College; M.A., Colorado State College of Education.
- VACHON, REGINALD I. *Alumni Associate Professor of Mechanical
Engineering*, 1958, 1963
B.M.E., M.S.N.S., Auburn University; Ph.D., Oklahoma State University.
- *VALLERY, GEORGIA G. *Assistant Professor of Psychology*, 1951, 1963
B.S., M.A., Louisiana State University; M.S., Auburn University.
- *VAN CLEAVE, ALBERT RAY *Instructor of Mathematics*, 1967
B.A., Alabama College; M.A., University of Alabama.
- VAN DE MARK, MILDRED S. *Professor of Home Economics*, 1948, 1966
B.S., Auburn University; M.A., Columbia University.
- VAN ZANTE, HELEN J. *Professor of Home Economics*, 1967
B.S., M.S., Ph.D., Iowa State University.

* Temporary.

VAUGHAN, JOHN THOMAS	<i>Associate Professor of Large Animal Surgery and Medicine</i> , 1955, 1965
D.V.M., M.S., Auburn University.	
VENTRICE, CARL ALFRED	<i>Associate Professor of Electrical Engineering</i> , 1966
B.S.E.E., M.S., Ph.D., Pennsylvania State University.	
VESTAL, DONALD M., JR.	<i>Head Professor of Mechanical Engineering (P.E.)</i> , 1959
B.S.M.E., B.S.E.E., M.S.M.E., Texas A&M University; Ph.D., Stanford University.	
VICKERY, JAMES F., JR.	<i>Director of Debate</i> , 1965
B.A., M.A., Auburn University.	
VIVES, DONALD LOUIS	<i>Associate Professor of Chemical Engineering</i> , 1953, 1957
B.S., M.S., Columbia University.	
WADE, MERLE L.	<i>Assistant Professor of Army ROTC</i> , 1965
B.A., Jacksonville State University; Major, U.S. Army.	
WALDEN, JOHN CLAYTON	<i>Assistant Professor of Education Administration, Supervision and Guidance</i> , 1966
B.A., University of California; M.A., California State College; Ph.D., Claremont College.	
WALDROP, HERBERT	<i>Assistant Professor in Health, Physical Education and Recreation</i> , 1960, 1967
B.S., M.S., Auburn University.	
WALKER, BRACK	<i>Associate Professor of Art</i> , 1961, 1967
B.A., Florence State College; M.F.A., University of Southern California.	
WALKER, DONALD F.	<i>Professor of Large Animal Surgery and Medicine</i> , 1958, 1966
D.V.M., Colorado State University.	
WALL, MINNIE	<i>Head of Catalog Division and Associate Professor (Library)</i> , 1947, 1965
A.B., Tift College; B.S.L.S., Peabody College; M.Ed., Auburn University.	
**WALLS, BILLY G.	<i>Associate Professor of Music</i> , 1961, 1965
B.M., Baylor University; M.Mus., Manhattan School of Music.	
*WALLS, NANCY MIMS	<i>Instructor of Art</i> , 1967
B.V.A., M.F.A., Auburn University.	
WALTERS, H. WAYNE	<i>Instructor in Foreign Languages</i> , 1966
B.A., Shorter College; M.A., University of Alabama.	
WALTERS, KENNETH W.	<i>Instructor in Philosophy</i> , 1964
B.A., Roosevelt University; M.A., Northwestern University.	
WARBINGTON, THOMAS L.	<i>Assistant Professor of Foreign Languages</i> , 1960, 1962
B.S., Mississippi College; M.A., University of Mississippi.	
WARD, BENJAMIN P.	<i>Associate Professor of Mechanical Engineering (P.E.)</i> , 1950
B.S., U.S. Naval Academy; M.S.M.E., Columbia University.	
WARD, C. H.	<i>Professor of Chemistry</i> , 1957, 1965
B.S., Indiana State Teachers College; M.S., University of Kentucky; Ph.D., Purdue University.	
*WARD, CHARLOTTE R.	<i>Assistant Professor of Physics</i> , 1959, 1964
B.S., University of Kentucky; M.S., Ph.D., Purdue University.	
WARMAN, JAMES C.	<i>Director of Water Resources Research Institute</i> , 1965
A.B., M.S., West Virginia University.	
WARNER, CARROLL R., JR.	<i>Assistant Professor of Military Science</i> , 1965
B.S., University of Maryland; Major, U.S. Army.	
WARNER, JOHN ELLSWORTH	<i>Head, Social Science Division and Associate Professor (Library)</i> , 1959, 1964
B.S., B.S.L.S., New York State Teachers College; M.A., Ed.D., Columbia University.	
WARREN, W. M.	<i>Head, Animal Science</i> , 1955, 1957
B.S., Michigan State University; M.S., Texas A&M University; Ph.D., University of Missouri.	
WASHINGTON, WILLIAM T.	<i>Assistant Professor in Health, Physical Education and Recreation</i> , 1958, 1967
B.S., M.S., Auburn University.	
WATERS, WILLIAM T.	<i>Professor of Textile Engineering</i> , 1958, 1963
B.S.T.E., Clemson University; M.S., Institute of Textile Technology.	
WATSON, JACK E.	<i>Assistant Professor of Zoology and Entomology</i> , 1965
B.S., Shippensburg State College; M.S., Ph.D., Purdue University.	
WEAR, JOHN I.	<i>Professor of Agronomy and Soils</i> , 1939, 1959
B.S., M.S., Auburn University; Ph.D., Purdue University.	
WEAVER, ANDREW M.	<i>Associate Professor of Education</i> , 1960
B.S., Tennessee Technological University; M.A., Ed.D., University of Tennessee.	
WEEKS, KARL L.	<i>Assistant Professor of Military Science, Army ROTC</i> , 1963
Major, U.S. Army.	

* Temporary.

** On leave.

- WESTMORELAND, FRANKLIN D. Assistant Professor, Army ROTC, 1965
B.S., Texas A&M University; Major, U.S. Army.
- WHARTENBY, FRANKLEE Assistant Professor of Economics, 1966
A.B., Alabama College; M.S., Ph.D., University of North Carolina.
- WHARTENBY, HARRY ALLEN Associate Professor of Foreign Languages, 1966
B.A., Temple University; M.A., Ph.D., University of North Carolina.
- WHATLEY, JAMES C., JR. Instructor in Economics and Business Administration, 1965
B.A., M.B.A., Auburn University.
- WHEATLEY, WALTER B. Instructor in Laboratory Technology, 1966
B.S., Birmingham-Southern College; M.T., (ASCP) Lloyd Noland Foundation.
- WHITE, CHARLES RAYMOND Associate Professor of Industrial Engineering, 1966
B.S.M.E., M.S.E., Ph.D., I.E., Purdue University.
- WHITE, MORRIS Professor of Agricultural Economics, 1950, 1960
B.S., Auburn University; M.S., Ph.D., Purdue University.
- *WHITE, VIRGINIA C. Associate Professor of Foods and Nutrition, 1954, 1966
B.S., Alabama College; M.S., University of Tennessee.
- WHITEFORD, ROBERT D. Professor of Anatomy-Histology, 1959
D.V.M., University of Georgia; M.S., Ph.D., Iowa State University.
- WHITMAN, HAROLD Instructor in Elementary Education, 1967
B.I.M., Auburn University.
- WIGGINS, ACEE M. Professor of Large Animal Surgery and Medicine, 1946, 1959
D.V.M., Auburn University; M.S., Kansas State University.
- WIGGINS, EARL L. Associate Professor of Animal Science, 1956
B.S., M.S., Oklahoma State University; Ph.D., University of Wisconsin.
- WILBANKS, MARY ELIZABETH Special Collections Librarian and Instructor (Library), 1959, 1962
A.B., Alabama College; M.A., Emory University; M.S.L.S., University of North Carolina.
- WILKEN, LEON O., JR. Associate Professor of Pharmacy, 1963
B.S., Loyola University; M.S., Ph.D., University of Texas.
- WILDER, VIRGINIA V. Assistant Professor of Elementary Education, 1966
B.S., M.Ed., University of Georgia.
- WILLERS, JACK C. Head Professor of Foundations of Education, 1967
B.A., M.A., Baylor University; B.D., Southwestern Theological Seminary; Ph.D., University of Texas.
- WILLIAMS, BYRON B., JR. Professor of Pharmacy, 1951, 1962
B.S., M.S., Ph.D., University of Florida.
- WILLIAMS, CHARLES E. Assistant Professor of Architecture, 1967
B.Arch., Texas A&M University.
- WILLIAMS, ELIZABETH GRIMES Assistant Professor in School of Business, 1946, 1959
B.S., M.S., Auburn University.
- WILLIAMS, ERNEST Professor of Mathematics, 1934, 1948
B.S., Birmingham-Southern College; M.S., Auburn University; Ph.D., University of Michigan.
- WILLIAMS, HUGH O. Professor of Art, 1957, 1959
B.A.A., Auburn University; M.F.A., A.E.D., Columbia University.
- WILLIAMS, LELAND H. Director, Computer Center, Associate Professor of Mathematics, 1966
B.S., University of South Carolina; M.S., University of Georgia; Ph.D., Duke University.
- WILLIAMSON, EDWARD C. Associate Professor of History and Political Science, 1957, 1963
A.B., M.A., University of Florida; Ph.D., University of Pennsylvania.
- WILLIS, BENJAMIN Assistant Professor, Army ROTC, 1967
B.S., United States Military Academy; Captain, U.S. Army.
- WILSON, LOWELL E. Associate Professor of Agricultural Economics, 1960, 1963
B.S., Murray State University; M.S., University of Kentucky; Ph.D., University of Illinois.
- WILT, GERALD R. Assistant Professor of Microbiology, 1962, 1965
B.S., Western Kentucky State University; M.S., Clemson University.
- WINGARD, JOHN W. Assistant Professor of Industrial Laboratories, 1957, 1962
B.S., M.S., Auburn University.
- WINGARD, ROBERT EUGENE Head Professor of Chemical Engineering, 1932, 1963
B.S., M.S., Auburn University.
- WINKLER, JOHN K. Associate Professor of Large Animal Surgery and Medicine, 1962, 1963
D.V.M., Colorado State University.

* Temporary.

WITHERSPOON, DON M.	<i>Associate Professor of Large Animal Surgery</i>
D.V.M., University of Georgia.	<i>and Medicine, 1964</i>
WOLFE, WALTER NOAKES	<i>Instructor in Mathematics, 1966</i>
B.S., Auburn University; M.S., DePaul University.	
WOLVERTON, CLYDE	<i>Instructor of Foreign Languages, 1966</i>
B.A., University of Akron.	
WOMACK, ABNER W.	<i>Instructor in School of Business, 1966</i>
B.S., M.S., Auburn University.	
WOODALL, JAMES R.	<i>Professor of English, 1952, 1965</i>
B.S., Murray State University; M.A., University of Kentucky; Ph.D., Vanderbilt University.	
WOODFIN, ROBERT JOSEPH	<i>Instructor in School of Business, 1967</i>
B.S.B.A., M.B.A., Auburn University.	
WOODLEY, CHARLES H.	<i>Professor of Physiology and Pharmacology, 1958, 1963</i>
D.V.M., M.S., Auburn University.	
WRIGHT, JAMES S.	<i>Instructor in Physiology, 1967</i>
B.S., M.S., Clemson University.	
WRIGHT, THOMAS L.	<i>Associate Professor of English, 1960, 1964</i>
B.A., M.A., Ph.D., Tulane University.	
YEAGER, JOSEPH H.	<i>Head, Department of Agricultural Economics,</i>
	<i>and Rural Sociology, 1946, 1964</i>
B.S., M.S., Auburn University; Ph.D., Purdue University.	
YIELDING, KATRINA	<i>Assistant Professor in Secondary Education, 1965, 1967</i>
B.S., M.S., Auburn University.	
YOUNG, LUTHER M.	<i>Associate Professor of Health, Physical Education</i>
B.S., M.S., Auburn University.	<i>and Recreation, 1944, 1959</i>
YOUNG, RICHARD EARLE	<i>Assistant Professor of Foundations of</i>
	<i>Education, 1959, 1963</i>
B.S., Florence State College; M.A., University of Vermont; M.Ed., Ed.D., Auburn University.	
YU, JAMES C. M.	<i>Assistant Professor in Mechanical Engineering, 1967</i>
B.S., National Taiwan University; M.S., Virginia Polytechnic Institute; Ph.D., Auburn University	
ZETTLER, THOMAS	<i>Assistant Professor, Naval ROTC, 1967</i>
B.A., St. Bernard College; Lt., U.S. Navy.	
ZIEGLER, PAUL F.	<i>Associate Professor of Chemistry, 1949, 1958</i>
B.S., Otterbein College; M.S., Ph.D., University of Cincinnati.	

EMERITI, 1967

DRAUGHON, RALPH BROWN	<i>President Emeritus, August, 1965</i>
B.S., M.S., Auburn University; LL.D., Birmingham-Southern College; L.H.D., Samford University; LL.D., University of Alabama.	
ALLEN, ROGER W.	<i>Dean Emeritus of the School of Science and Literature, June, 1967</i>
B.S., M.S., Auburn University; M.S., University of Michigan; Ph.D., Columbia University.	
ALLISON, FRED	<i>Professor Emeritus of Physics, March, 1961</i>
A.B., Emory and Henry College; M.A., Ph.D., University of Virginia; D.Sc., Auburn University; LL.D., Emory and Henry College.	
ALVORD, BEN FINLEY	<i>Professor Emeritus of Research Data Analysis, June, 1966</i>
B.S., M.S., University of Illinois.	
ATKINSON, T. P.	<i>Professor Emeritus of Foreign Languages, March, 1961</i>
Ph.B., A.B., Lebanon University; M.A., University of Georgia.	
BASORE, CLEBURNE A.	<i>Professor Emeritus of Chemical Engineering, June, 1963</i>
B.S., M.S., Auburn University; M.A., University of Michigan; Ph.D., Columbia University.	
BURKHARDT, E. WALTER	<i>Professor Emeritus of Architecture, June, 1964</i>
B.S., Arch., Washington State University; M.S., Arch., Columbia University.	
CARLOVITZ, GILES H.	<i>Professor Emeritus of Electrical Engineering, June, 1965</i>
B.S., M.S.E.E., Auburn University.	
COPPEDGE, WILLIAM HOUSTON	<i>Associate Professor Emeritus of Industrial Engineering, June, 1966</i>
B.S., Oklahoma State University; M.S., Auburn University.	
EATON, W. H.	<i>Associate Professor Emeritus of Dairy Husbandry, March, 1961</i>
B.S., North Carolina State University.	
EDWARDS, CHARLES WESLEY	<i>Registrar Emeritus, June, 1966</i>
B.S., Auburn University; M.A., Harvard University.	

ELIZONDO, YNDALECIO ANDRES	<i>Associate Professor Emeritus of B.S.C.E., B.S.M.E., M.S., Auburn University.</i>	<i>Mechanical Engineering, June, 1966</i>
GOSSE, LEO G.	<i>Professor Emeritus of English, June, 1967</i>	<i>B.S., Kirksville State College; Ph.D., University of Chicago.</i>
CRIMES, J. C.	<i>Professor Emeritus of Animal Husbandry and Nutrition, March, 1961</i>	<i>B.S., University of Tennessee; M.S., University of Kentucky.</i>
GUYTON, FAYE E.	<i>Professor Emeritus of Zoology-Entomology, June, 1963</i>	<i>B.S., M.S., Ohio State University.</i>
HOEPFNER, THEODORE CHRISTIAN	<i>Professor Emeritus of English, June, 1966</i>	<i>B.S., Memphis State University; M.A., Vanderbilt University.</i>
HUTSELL, WILBUR HALL	<i>Professor Emeritus, Athletic Department, June, 1963</i>	<i>A.B., University of Missouri.</i>
ISBELL, C. L.	<i>Professor Emeritus of Horticulture, March, 1961</i>	<i>B.S., Auburn University; M.S., Michigan State University.</i>
JONES, DAN T.	<i>Professor Emeritus of Industrial Laboratories, June, 1961</i>	<i>Diploma, Auburn University.</i>
KUDERNA, JEROME	<i>Professor Emeritus of Education, June, 1962</i>	<i>B.S., M.A., Michigan State University.</i>
MOORE, JOHN RICHARD	<i>Professor Emeritus of English, 1964</i>	<i>A.B., Tulane University; A.M., Ph.D., Harvard University.</i>
PITTS, JOHN E.	<i>Associate Professor Emeritus of Mathematics, March, 1961</i>	<i>B.S., E.E., Auburn University.</i>
ITCHIE, VIRGINIA CORBIN	<i>Associate Professor Emeritus of Home Economics, June, 1966</i>	<i>B.S., M.S., University of Kentucky.</i>
ROBINSON, A. JUDE	<i>Associate Professor Emeritus of Mathematics, June, 1967</i>	<i>B.S., Clemson University; M.A., Emory University.</i>
ROE, JOHN W.	<i>Associate Professor Emeritus of Foreign Languages, March, 1961</i>	<i>A.B., M.A., Cornell University.</i>
SAHAG, L. M.	<i>Professor Emeritus of Engineering Graphics, March, 1961</i>	<i>B.S., University of North Carolina; M.S., Auburn University.</i>
SEAL, JAMES LEWIS	<i>Professor Emeritus of Botany, June, 1963</i>	<i>B.S.Ag., Clemson University; M.S., Iowa State University; Ph.D., University of Minnesota.</i>
SPANN, RANSOM D.	<i>Professor Emeritus of Electrical Engineering, June, 1964</i>	<i>B.S.E.E., E.E., Auburn University.</i>
SPIDLE, MARION WALKER	<i>Dean Emeritus of the School of Home Economics, June, 1966</i>	<i>B.S., Alabama College; B.S., M.A., Columbia University.</i>
SPRAGUE, ALBERT T.	<i>Associate Professor Emeritus of Electrical Engineering, June, 1967</i>	<i>B.S., U.S. Naval Academy; M.S., Harvard University.</i>
WARE, LAMAR MIMS	<i>Head Professor Emeritus of Horticulture, June, 1966</i>	<i>B.S., M.S., Auburn University.</i>
WATWOOD, VERNON BELL	<i>Professor Emeritus of Civil Engineering, June, 1966</i>	<i>B.C.E., M.C.E., Auburn University.</i>
WHITE, RAYMOND H.	<i>Professor Emeritus of Education, April, 1965</i>	<i>B.S., Southwest Missouri State College; A.B., Drury College; A.M., University of Chicago; Ed.D., Columbia University.</i>

ADMINISTRATIVE AND TECHNICAL STAFF

ALLGOOD, JAMES LOUIS	Maintenance Custodian, Women's Dormitories, 1954
ANDERSON, JAMES A.	Production Manager, Educational TV, 1964, 1966 B.A., University of Alabama.
ANDREWS, RUBY S.	Housemother, Magnolia Dormitories, 1961, 1963
ATTLEBERGER, FREDERICK RAYMOND	Instructor in Laboratory M.T., Franklin School of Science and Arts, Technology, 1941, 1944
BAILEY, BESSIE	Chief Operator PBX, Buildings and Grounds, 1947, 1959
BALL, JOHN COOPER, JR.	Director of Nonacademic Personnel, 1967 B.S.M.E., Auburn University.
BARROW, WILLIAM OWENS	Senior Counselor, Student Counseling A.B., Birmingham-Southern College; M.A., Peabody College. Service, 1948, 1951
BARTON, FREIDA C.	Head Resident of Dana Gatchell Hall, 1956, 1962
BEATY, MAUDE F.	Head Resident, Dowell Hall, 1965
BECKWITH, WILLIAM H.	Director of Sports Public Relations, 1951, 1958 B.S., Auburn University.
BENTLEY, CHARLES S.	Assistant Dean of Student Affairs, 1951, 1965 B.S., M.S., Auburn University.
BICKEL, MARGARET E.	Tabulating Equipment Supervisor, Business Office, 1945, 1963
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Animal Health Research

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Animal Science

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Botany and Plant Pathology

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Horticulture	
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Publications

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Research Data Analysis

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Zoology-Entomology

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GREENE, GEORGE N.	<i>Assistant Professor</i> , 1963, 1964
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KOUSKOULEKAS, COSTAS A.	<i>Assistant Professor</i> , 1967
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ROGERS, W. A.	<i>Assistant Professor</i> , 1964, 1967
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SUBSTATIONS AND FIELDS

Black Belt—Marion Junction, Dallas County

SMITH, L. A.	<i>Superintendent</i> , 1951, 1957
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Chilton Area Horticulture—Clanton, Chilton County	
CARLTON, C. C.	Superintendent, 1948 B.S., Auburn University.
SHORT, KENNETH C.	Assistant Superintendent, 1960 B.S., Auburn University.
Gulf Coast—Fairhope, Baldwin County	
YATES, HAROLD F.	Superintendent, 1931, 1959 B.S., Auburn University.
BARRETT, J. E., JR.	Assistant Superintendent, 1948 B.S., Auburn University.
Lower Coastal Plain—Camden, Wilcox County	
BROWN, V. L.	Superintendent, 1949 B.S., Mississippi State University.
FOWLER, WILLIAM E.	Assistant Superintendent, 1965 B.S., Berry College.
WATSON, W. J.	Assistant Superintendent, 1958 B.S., Auburn University.
North Alabama Horticulture—Cullman, Cullman County	
HOLLINGSWORTH, M. H.	Superintendent, 1958, 1962 B.S., Auburn University.
Piedmont—Camp Hill, Tallapoosa County	
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BURGESS, HOYT E.	Assistant Superintendent, 1967 B.S., Auburn University.
Sand Mountain—Crossville, DeKalb County	
GISENDANNER, S. E.	Superintendent, 1941, 1946 B.S., Auburn University.
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Tennessee Valley—Belle Mina, Limestone County	
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Upper Coastal Plain—Winfield, Fayette County	
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Wiregrass—Headland, Henry County	
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Ornamental Horticulture Field Station—Spring Hill, Mobile County	
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Alexandria Field—Calhoun County	
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Brewton & Monroeville Fields—Escambia & Monroe Counties	
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BARNETT, JOHN W. B.S., M.S., Auburn University.	<i>Chemical Analyst, Zoology-Entomology, 1966</i>
BLACK, A. L.	<i>Ponds Foreman, Zoology-Entomology, 1948</i>
BRYCE, HARRISON MORGAN B.S., Auburn University.	<i>Technical Assistant, Horticulture, 1967</i>
COLLUM, DOVARD R.	<i>Technical Assistant, Agronomy and Soils, 1957</i>
DIXON, JOHN KELLY B.S.Ch.E., Auburn University.	<i>Chemical Analyst, Agronomy and Soils, 1967</i>
ELLINGTON, CLAUDE S.	<i>Assistant Ponds Foreman, Zoology-Entomology, 1962</i>
FINCHER, STALEY E. B.S., Auburn University.	<i>Farm Foreman, Poultry Science, 1959</i>
FLANAGAN, CORNELIA S.	<i>Senior Laboratory Technician, Poultry Science, 1942, 1961</i>
FLANAGAN, GEORGE D.	<i>Plant Manager, Dairy Science, 1935</i>
FORMBY, MILTON	<i>Laboratory Stores Attendant, Forestry, 1967</i>
GARDNER, DORIS E.	<i>Senior Clerk, Poultry Science, 1949, 1965</i>
GARRETT, FRANK	<i>Assistant in Horticulture (Gulf Coast Substation at Fairhope), 1943</i>
GOLDEN, CYRIL T.	<i>Maintenance Custodian, Animal Disease Research, 1965</i>
GRAY, CLIFTON B.	<i>Assistant Farm Foreman, Dairy Science, 1966</i>
HEARN, WILLIAM H. B.S., Auburn University.	<i>Systems Analyst, 1950, 1963</i>
HIGGINS, J. H.	<i>Production Manager (Foundation Seed Stocks Farm at Thorsby), Agronomy and Soils, 1963</i>
HORNE, ELEANOR	<i>Senior Clerk, Agronomy and Soils, 1922, 1959</i>
HUNTER, ROBERT C. B.S., Auburn University.	<i>Technical Assistant, Zoology-Entomology, 1960, 1962</i>
JONES, JAMES R.	<i>Meats Laboratory Manager, Animal Science, 1962, 1966</i>
JONES, LESLIE J.	<i>Farm Foreman, Agronomy and Soils, 1959</i>
JONES, MARIE	<i>Administrative Assistant (Coop. USDA), Agricultural A.B., Huntingdon College, M.S., Auburn University. Engineering, 1939, 1965</i>
JONES, W. G.	<i>Assistant Plant Manager, Dairy Science, 1937</i>
LANCASTER, MAYO	<i>Assistant Foreman, Dairy Science, 1952, 1957</i>
MARTIN, LYNDON M., Jr. B.S., University of Alabama.	<i>Chemical Analyst, Agronomy and Soils, 1966</i>
MATHISON, M. C.	<i>Farm Foreman, 1942, 1957</i>
McCAIN, JASPER T.	<i>Technical Assistant, Horticulture, 1966</i>
McHARGUE, PETE	<i>Technical Assistant, Agronomy and Soils, 1963</i>
McMURTRY, BETTY	<i>Administrative Aide (Coop. USDA), Agronomy and Soils, 1960, 1966</i>
PARR, HENRY W.	<i>Assistant Farm Foreman, Poultry Science, 1965</i>
SCALES, WILLIAM L.	<i>Electronics Technician, Agricultural Engineering, 1967</i>
SIDES, DEWEY	<i>Technical Assistant, Agronomy and Soils, 1967</i>
SEGREST, S. J., Jr.	<i>Technical Assistant, Agronomy and Soils, 1966</i>
SIMPSON, BRUCE	<i>Electronics Technician, Agricultural Engineering, 1966</i>
STEVENSON, FRANCES S.	<i>Statistical Assistant, 1965, 1967</i>
TIPPINS, FRANCES E.	<i>Financial Assistant, Administration, 1929, 1966</i>
VAUGHT, JAMES V.	<i>Machinist, Agricultural Engineering, 1966</i>
WILKINSON, LAMAR B.S., Auburn University.	<i>Herdsman, Animal Science, 1967</i>

COOPERATIVE EXTENSION SERVICE STAFF

HARRY M. PHILPOTT, A.B., Ph.D., D.D., LL.D., President

ROBERTSON, FRED R., JR.	Vice President for Extension and <i>Director of Cooperative Extension Service</i> , 1959, 1966
B.S., M.S., University of Tennessee; Dr.P.A., Harvard University.	
JONES, RALPH R.	Associate Director, 1936, 1962
B.S., Auburn University; M.S., Michigan State University.	
TAYLOR, W. H.	Assistant Director, 1946, 1965
B.S., Auburn University; M.S., Ed.D., Cornell University.	
WARREN, HOYT M.	Assistant Director, 1945, 1965
B.S., Auburn University; M.S., Ed.D., Cornell University.	
COLEMAN, MARY E.	Assistant Director for Women's Work, 1936, 1965
B.S., Auburn University; M.A., Columbia University.	
HILL, W. B.	Assistant to the Director, 1935, 1965
B.S., Tuskegee Institute; M.S., Cornell University; Ph.D., University of Wisconsin.	
REAVES, R. M.	Assistant to the Director, Field Service, 1927, 1962
B.S., Auburn University.	
WILLIAMS, H. EARLE	Head, Management Service, 1945, 1960
A.B., Birmingham-Southern College.	
HORN, ROBERT C.	Assistant Head, Management Service, 1944, 1965
B.S., Auburn University; M.S., University of Wisconsin.	
SHERER, RALPH L.	Coordinator for Continuing Education and <i>Extension Training</i> , 1955, 1966
B.S., Auburn University; M.S., Cornell University.	
WHITE, J. HERBERT	Director of University Relations, 1960, 1966
B.S., Auburn University.	

SUPERVISORS

BULLINGTON, JOHN C.	District Extension Chairman, 1939, 1965
B.S., Auburn University.	
DAVIS, S. L.	District Extension Chairman, 1942, 1965
B.S., Auburn University; M.S., Cornell University.	
LUMPKIN, T. W.	District Extension Chairman, 1934, 1965
B.S., Auburn University.	
MCMILLAN, GEORGE D. H.	District Extension Chairman, 1942, 1965
B.S., Auburn University.	
JONES, ROBERT F.	District Farm Agent, 1949, 1966
B.S., Tuskegee Institute.	
McDANIEL, CLARENCE H.	District Farm Agent, 1952, 1965
B.S., Alabama A&M College.	
HULSEY, MARY	Associate District Extension Chairman, 1941, 1965
B.S., Auburn University; M.A., Columbia University.	
IVEY, EUNICE	Associate District Extension Chairman, 1949, 1965
B.S., Alabama College; M.S., University of Alabama.	
MALLETT, LUCILE	Associate District Extension Chairman, 1936, 1965
B.S., Auburn University; M.S., University of Minnesota.	
PARKMAN, PATTY	Associate District Extension Chairman, 1947, 1965
B.S., Alabama College.	
RIVERS, RUTH L.	District Home Agent, 1937, 1965
B.S., Tuskegee Institute; M.A., Columbia University.	
WALKER, CLEO S.	District Home Agent, 1958, 1965
B.S., M.S., Tuskegee Institute.	

DIVISION CHAIRMEN

CAVENDER, A. R.	Chairman, Resource Use Division, 1958, 1965
B.S., M.S., University of Tennessee; Ph.D., University of Wisconsin.	
CHESNUTT, R. R.	Chairman, Extension Information, 1941, 1965
B.S., Auburn University.	
GOSSETT, JOHN WARREN	Chairman, Animal Science Division, 1962
B.S., University of Tennessee; M.S., Ph.D., Texas A&M University.	
HAGLER, THOMAS BENJAMIN	Chairman, Plant Science Division, 1960
B.S., M.S., Auburn University; Ph.D., University of Maryland.	
JONES, HILMER LANE	Chairman, Environmental Health Division, 1967
B.S., D.V.M., M.S., Auburn University.	

SPECIALISTS

AGNEW, THOMAS R.	4-H Club Specialist, 1935, 1965
B.S., M.Ed., Tuskegee Institute.	
BAGBY, JOHN	Specialist in Commercial Horticulture, 1944, 1949
B.S., Virginia Polytechnic Institute.	
BALCH, TALMADGE G.	Specialist in Pesticide Education, 1957, 1965
B.S., M.Ag., Auburn University.	
BARR, ANN	State 4-H Club Leader for Girls, 1945, 1950
B.S., Alabama College.	
BASKIN, CHARLES C.	Specialist in Pesticide Education, 1965
B.S., M.Ag., Auburn University.	
BICE, VERNON C.	Radio & TV Editor, 1958, 1964
B.S., M.Ag., Auburn University.	
BOND, M. D.	Peanut and Soybean Specialist, 1955, 1960
B.S., M.Ag.Ed., Auburn University.	
BROWN, A. J.	Specialist in Marketing, 1948, 1963
B.S., M.Ag.Ed., Auburn University.	
BRYAN, ELIZABETH	Economist, Home Management, 1939, 1957
M.S., University of Tennessee; B.S., Auburn University.	
BUFORD, JAMES A., JR.	Forest Products Marketing and Utilization Specialist, 1965, 1966
B.S., M.S., Auburn University.	
CHAPMAN, LOUIE J.	Specialist in Agronomy, 1967
B.S., M.S., Auburn University; Ph.D., University of Florida.	
CHENEY, WALTER A.	Art Editor, 1958, 1962
B.A.A., Auburn University.	
CLARK, ROBERT R.	Specialist in Recreation, 1954, 1965
B.S., M.S., Auburn University.	
CLOSE, ELMER GEORGE	Specialist in Horticulture Marketing, 1965
B.S.A., M.S., Ph.D., University of Florida.	
COLLINS, RICHARD JAMES	Extension Plant Pathology Assistant, 1967
B.S., University of Miami; M.S., Texas A&M University.	
COPELAND, KENNETH J.	News Editor, 1957, 1960
B.S., Auburn University.	
DANION, JAMES RICHARD	Animal Husbandman, 1960, 1965
B.S., M.S., University of Georgia.	
DAVIS, CECIL G.	District Program Specialist, 1948, 1966
B.S., M.Ag., Auburn University.	
DEESE, RICHARD E.	Animal Husbandman, 1965
B.S., M.S., Mississippi State University; Ph.D., University of Florida.	
DICKENS, RAY	Specialist in Weed Control, 1965
B.S., University of Arkansas; M.S., Ph.D., Auburn University.	
DOWNEY, ISABELLE	Specialist in Food Preservation, 1944, 1958
B.S., Auburn University; M.S., University of Georgia.	
EICH, SAMUEL M., JR.	Specialist, Rural Resource Development, 1957, 1962
B.S., M.Ag., Auburn University.	
ELLIOTT, JOHN, JR.	Specialist, Pesticide Education, 1953, 1966
B.S., M.Ag., Auburn University.	
ENNIS, LAWRENCE	(P.E.), Specialist in Soil Engineering, 1945, 1949
B.S., Auburn University.	
FARRAR, LUTHER L.	Specialist in Plant Pathology and Nematology, 1966
B.S., Centenary College; M.S., Ph.D., Louisiana State University.	
FITE, BARBARA A.	Specialist in Human Development, 1956, 1966
B.S., Alabama College; M.S., University of Alabama.	
GAILLARD, J. T.	(P.E.), Specialist, Rural Civil Defense, 1944, 1966
B.S., Auburn University.	
GIVHAN, JOE P.	Specialist, Rural Resource Development, 1935, 1963
B.S., Auburn University.	
GLASSCOCK, M. R.	Specialist in Fruits and Vegetable Marketing, 1941, 1962
B.S., Auburn University.	
HARTZOG, DALLAS L.	Program Coordinator, Peanuts, 1966, 1967
B.S., M.S., Auburn University.	
HENDERSON, J. B.	Specialist in Cotton, 1960, 1963
B.S., M.S., Auburn University.	

HERD, DENNIS B.	Extension Animal Husbandman, 1967
B.S., Berea College; M.S., Ph.D., University of Kentucky.	
HIGH, THOMAS W. JR.	Extension Animal Husbandman, 1966
B.S., University of Florida; M.S., Ph.D., University of Tennessee.	
HUIK, JOHN M.	Specialist, Rural Resource Development, 1962
B.S., M.S., Auburn University.	
JOHNSON, PAUL O.	Specialist, Rural Resource Development, 1959, 1965
B.S., M.Ed., Auburn University.	
JONES, BERTHA MAE	4-H Club Specialist, 1945, 1965
B.S., Alabama A&M College; M.Ed., Pennsylvania State University.	
JONES, R. S., JR.	Dairyman, 1941, 1959
B.S., Auburn University.	
KENNAMER, E. F.	Specialist in Wildlife, 1940, 1960
B.S., M.S., Auburn University.	
LANIER, WORTH	Extension Veterinarian, 1960
B.S., Mississippi State University; D.V.M., Auburn University.	
LEDEBETTER, ROY J.	Entomologist, 1954, 1962
B.S., Auburn University; Ph.D., Mississippi State University.	
LEE, VERREN WILSON	Specialist, Poultry Marketing, 1965, 1967
B.S., Auburn University; M.S., University of Arizona.	
LEEFER, RAYMOND O., III	Specialist in Entomology, 1967
B.S., M.S., Mississippi State University.	
LINK, JAMES GORDON	Agronomist, 1959, 1963
B.S., M.S., Auburn University.	
LINTON, DANIEL A., JR.	Specialist in Livestock Marketing, 1962
B.S., M.S., Auburn University.	
LOGUE, H. E.	State 4-H Club Leader, 1942, 1948
B.S., M.A.G.Ed., Auburn University.	
MCQUEEN, HOUSTON FRANK	Survey Entomologist, 1963
B.S., Auburn University.	
MADDOX, BOBBY JACK	Assistant Art Editor, 1966
B.S., Auburn University.	
MADDOX, C. L.	Specialist in Farm Management, TVA, 1954, 1960
B.S., M.S., Auburn University.	
MARABLE, JOHNIE A.	District Program Specialist, 1955, 1966
B.S., M.S., Auburn University.	
MARABLE, VIRGINIA H.	Assistant Specialist, Educational Methods, 1960, 1967
B.S., Auburn University.	
MARKS, HERMAN H.	District Program Specialist, 1954, 1963
B.S., M.A.G., Auburn University.	
MAYFIELD, M. CECIL	4-H Editor, 1955, 1966
B.S., Auburn University.	
OVERBEY, DOROTHY	Specialist in Consumer Education, 1943, 1949
B.S., University of Tennessee.	
PARKER, CARL	Specialist in Horticultural Production, 1944, 1961
B.S., Auburn University.	
PARRISH, J. R.	Dairyman, 1938, 1948
B.S., M.S., Auburn University.	
PARROTT, JOHN L.	News Editor, 1959, 1961
B.S., M.Ed., Auburn University.	
PEAVY, ALICE	Economist, Home Furnishings, 1941, 1959
B.S., University of Alabama; M.A., Columbia University.	
PITTS, JAMES H.	Specialist, Livestock Production, TVA, 1955, 1965
B.S., M.S., Mississippi State University.	
PRICKETT, FARIS	Specialist in Foods and Nutrition, 1955, 1958
B.S., M.S., Auburn University.	
PRIESTER, JEANNE	Specialist in Educational Methods, 1958, 1964
B.S., Alabama College; M.S., Auburn University.	
ROBERTS, LARRY W.	Specialist in Farm Management, TVA, 1960, 1965
B.S., M.S., Auburn University.	
SEGREST, CHARLES H.	Specialist, Rural Resource Development, 1956, 1962
B.S., M.A.G.Ed., Auburn University.	
SHIPP, TRAVIS	Specialist in Rural Resource Development (Ind. Mgmt.), 1967
B.I.M., M.B.A., Auburn University.	

SHUMACK, RONALD LEE	Specialist, Ornamental Horticulture, 1967
B.S., M.Agr.Ed., Auburn University.	
SMITH, DANIEL BRUCE	Specialist, Farm Management, 1965
B.S., Auburn University; M.S., University of Tennessee.	
SMITH, JACK D.	News Editor, 1962
B.A., Auburn University.	
SMITH, PERRY M.	Specialist in Commercial Horticulture, 1966
B.S., Clemson University; M.S., North Carolina State University.	
SOWELL, WALTER F.	Soils Specialist, 1948, 1960
B.S., M.S., Auburn University; Ph.D., Purdue University.	
SPEAKMAN, GENTA S.	Specialist, Housing and Equipment, 1966
B.S., M.S., Auburn University.	
STOREY, CLEVELAND U.	Specialist, Rural Resource Development, 1965
B.S., Auburn University; M.Agr., University of Florida.	
STRAIN, WILLIE LEE	Assistant Editor, 1955, 1965
B.S., M.Ed., Tuskegee Institute.	
STRICKLAND, ELMER OSCAR	District Program Specialist, 1960, 1963
B.S., M.Agr.Ed., Auburn University.	
TERRELL, ROBERT N.	Specialist in Food Science, 1966
B.S., Oklahoma State University; M.S., University of Tennessee; Ph.D., University of Wisconsin.	
THOMAS, CHARLES F.	Specialist in Poultry, 1958, 1966
B.S., M.S., Auburn University.	
THOMPSON, KATHLEEN	Specialist in Clothing and Handicraft, 1944, 1952
B.S., University of Alabama; M.S., Pennsylvania State University.	
THORNHILL, H. B.	Marketing Specialist in Ornamental Horticulture, 1941, 1961
B.S., Auburn University; M.S., Clemson University.	
TIDWELL, MACON B.	Specialist, Rural Resource Development, 1957, 1961
B.S., M.Agr., Auburn University.	
WADE, LARKIN H.	Extension Forester, 1965
B.S., M.S., Auburn University.	
WATSON, HAROLD	Specialist in Agricultural Engineering, 1966
B.S., M.S., Louisiana State University.	
WHITTEBURN, BOBBY LEROY	4-H Livestock Specialist, 1965
B.S., M.S., University of Tennessee.	
WILLIAMS, GERTHEN E.	Visual Editor, 1960, 1967
B.S., Auburn University.	
WILLIAMS, WILLIAM R.	Test Demonstration Supervisor, 1946, 1962
B.S., Auburn University; M.S., University of Tennessee.	
WILSON, WILLIAM E.	Specialist, Rural Resource Development, 1954, 1961
B.S., M.Agr., Auburn University.	
WOODS, WILLIAM F.	Specialist, Public Affairs and Resource Management, 1966
B.S., M.S., Auburn University.	

OTHER STAFF

BROWN, GRACE F.	Administrative Assistant, 1958, 1966
GOOD, MYRTLE L.	Administrative Assistant, 1929, 1966
HABERCOM, SARA B.	Editorial Assistant, 1967
A.B., Birmingham Southern.	
JETER, DALENE	Administrative Assistant, 1928, 1966
JETER, RENNIE	Business Assistant, 1934, 1947
MAGILL, JACQUELYN E.	Editorial Assistant, 1966
B.S., Auburn University.	
ROWELL, SUSAN A.	Editorial Assistant, 1967
B.S., Auburn University.	
SMITH, MARY JANE	Editorial Assistant, 1967
B.A., University of Rhode Island.	

COUNTY STAFFS

(List for each county as follows: County Address, county extension chairman, extension farm agent; associate county extension chairman, extension home agent; first appointment, present appointment. All degrees are from Auburn University unless otherwise indicated.)

AUTAUGA Prattville	R. H. Kirkpatrick, B.S., 1944, 1965; Jerry A. Green, B.S., Tuskegee Institute, 1954, 1965; Max F. Scott, B.S., 1962-1965. Margaret Campbell, B.S., Alabama College; M.S., University of Tennessee, 1950, 1965; Louvenia A. Lee, B.S., Tuskegee Institute, 1955, 1965.
BALDWIN Bay Minette	F. C. Turner, B.S., 1938, 1965; W. H. Johnson, B.S., 1934, 1965; Donald Eugene Dunn, B.S., 1962, 1965; Edward J. Coats, B.S., Western Kentucky State University; M.S., 1966. Mary C. Silvey, B.S., 1955, 1965; Eugenia Small, B.S., 1937, 1965; Marvell Gwaltney, B.S., University of Alabama, 1959, 1965.
BARBOUR Clayton	J. W. Walton, B. S., 1946, 1965; Jerry L. Brown, B.S., 1967; William H. Lindsey, B.S., Tuskegee Institute, 1966. Marilyn Dees Bennett, B.S., 1964, 1965; Betty Lumpkin Caraway, B.S., 1967; Tommie W. Clark, B.S., Tuskegee Institute, 1940, 1965.
BIBB Centreville	J. C. Odom, B.S., 1935, 1965; T. W. Camp, B.S., 1951, 1965. Kirtis Martin, B.S., 1933, 1965; Margaret P. Hollingsworth, B.S., M.A.T., Alabama College, 1967.
BLOUNT Oneonta	D. S. Loyd, B.S., M.Ag., 1942, 1965; James O. Conway, B.S., M.Ed., 1967; L. C. McCall, B.S., 1955, 1965. Mildred Gilbert, B.S., M. of H. Ec., 1944, 1965.
BULLOCK Union Springs	W. E. Stone, B.S., M.Ag., 1947, 1965; Henry M. Brooker, B.S., M.Ed., Tuskegee Institute, 1967; William Wright Curtis, B.S., 1963, 1965. Carolyn Henderson, B.S., 1941, 1965; Nannie S. Rhodes, B.S., Southern University, 1959, 1965.
BUTLER Greenville	F. H. Morgan, B.S., M.Ag., 1946, 1965; J. P. Moore, B.S., M.Ag., 1953, 1965; Jacob H. Ross, B.S., Tuskegee Institute, M.A., Michigan State University, 1950, 1965; R. C. Thompson, B.S., 1954, 1965. Laurine Howell, B.S., University of Alabama, 1949, 1965; Marie E. Mixon, B.S., Tuskegee Institute, 1967; Bernice Gail Stokes, B.S., Harding College, 1965.
CALHOUN Anniston	A. S. Mathews, B.S., 1941, 1965; Goode Nelson, A.B., University of Alabama, 1945, 1965; L. C. Pair, B.S., M.Ag., 1948, 1965; John D. Sellers, B.S., 1949, 1966. Shirley Ann Harrison, B.S., 1961, 1965; Peggy Sue Dean, B.S., 1967; Sylvia Ruth Ruffin, B.S., University of Alabama, 1965.
CHAMBERS LaFayette	Howard A. Taylor, B.S., M.Ag.Ed., 1962, 1967; Larry D. Easterwood, B.S., 1961, 1965; Willie Lawson, B.S., Alabama A&M College, M.Ed., Tuskegee Institute, 1947, 1965; E. L. Stewart, B.S., M.S., 1944, 1967. Exa Till, B.S., 1946, 1965; Mary Frances Griggs, B.S., Alabama A&M College, 1952, 1965; Judith Latimer, B.S., Alabama College, 1965.
CHEROKEE Centre	J. J. Young, B.S., M.S., 1933, 1965; J. B. Butler, B.S., 1954, 1967; Charles R. Moody, B.S., 1964, 1965; F. M. Patterson, B.S., M.S., University of Tennessee, 1954, 1965. Geneva Marshall James, B.S., 1941, 1965; Irene J. Lackey, B.S., 1965, 1967.
CHILTON Clanton	W. R. Futral, B.S., M.Ag., 1959, 1965; Norman R. McDaniel, B.S., M.S., 1967; D. R. Mims, B.S., 1953, 1965. Mrs. Johnnie Lane, A.B., Judson College, 1952, 1965; Sarah Hickman McDowell, B.S., Alabama College, 1967.

CHOCTAW Butler	Mathew Sexton, B.S., 1937, 1965; Joseph T. Banks, B.S., M.Ed., Tuskegee Institute, 1947, 1965; R. B. Deavours, B.S., 1946, 1965; Grace M. Prince, B.S., 1951, 1965; Dale B. Dawkins, B.S., University of Alabama, 1967; Gladys A. Horne, B.S., Tuskegee Institute, 1950, 1965.
CLARKE Grove Hill	O. C. Helms, B.S., 1930, 1965; Howard N. Reynolds, B.S., M.Ag. Ed., 1962, 1965. Sara G. Alexander, B.S., Mississippi State College for Women, 1967; Joe Ann Arthur, B.S., University of Southern Mississippi, 1967.
CLAY Ashland	W. H. Cowan, B.S., 1936, 1965; Loyd P. Owens, B.S., M.Ag., 1954, 1965. Dora-grace Smith, B.S., Alabama College, 1952, 1965; Martha M. Hindman, B.S., Jacksonville State University, 1967.
CLEBURNE Heflin	T. A. Ventress, B.S., 1937, 1965; E. C. Farrington, B.S., 1941, 1965. Annie Rae Milner, B.S., Alabama College, 1941, 1965; Linnie Jane Dowdle, B.S., University of Alabama, 1967.
COFFEE Enterprise	T. C. Casaday, B.S., M.Ag., 1949, 1965; Dan J. Presley, B.S., 1964, 1966; J. R. Speed, 1943, 1965. Sarah Hutchinson, B.S., Howard College, M.S., 1956, 1965; Virginia E. Sanders, B.S., 1964, 1965.
COLBERT Tuscumbia	D. C. Somerville, B.S., 1939, 1965; Dallas Hollaway, Jr., B.S., 1964, 1965; B. T. Richardson, B.S., 1945, 1965; Daniel R. Salter, B.S., M.S., Tuskegee Institute, 1949, 1965. Christa Hall, B.S., University of Alabama, 1950, 1965; Betty Carolyn Davis Moore, B.S., 1963, 1965; Elizabeth S. Stough, B.S., Alabama A&M College; M.Ed., Tuskegee Institute, 1946, 1965.
CONECUH Evergreen	M. H. Huggins, B.S., 1936, 1965; George W. Jackson, B.S., M.S., Tuskegee Institute, 1966; Robert B. Moorer, B.S., 1967; H. J. Oakley, B.S., 1954, 1965. Louise T. Ostrum, B.S., M.Ed., 1957, 1965; Hazel H. Harpe, B.A., Judson College, 1961, 1965.
COOSA Rockford	G. S. Sessions, B.S., M.Ag.Ed., 1955, 1965; *Elmer Dowdell, B.S., Alcorn A&M College; M.S., Tuskegee Institute, 1957, 1965; Jerry Walls, B.S., 1963, 1965. Thelma E. Graves, B.S., M.S., Iowa State University, 1961, 1966; Mariah B. Brymer, B.S., M.Ed., Tuskegee Institute, 1963, 1965; Barbara Ann Johnson, B.S., Alabama College, 1967.
COVINGTON Andalusia	W. H. Kinard, B.S., M.Ag., 1954, 1965; John W. Fryer, B.S., 1964, 1965; Robert E. Linder, B.S., M.Ag., 1960, 1965; C. W. Pike, B.S., M.Ag., 1952, 1965. Mary Ellen Haynes, B.S., Alabama College, 1951, 1965; Ann T. Martin, B.S., University of Alabama, 1966.
CRENSHAW Luverne	O. W. Reeder, B.S., 1941, 1965; G. B. Handley, B.S., 1948, 1965. Eunice Prater King, B.S., Alabama College, 1953, 1965; Doris M. Eason, B.S., Jacksonville State University, 1967.
CULLMAN Cullman	H. G. Pinkston, B.S., 1937, 1965; Claude L. Dorminey, B.S.A., University of Georgia, 1967; Harold Eugene Rose, B.S., 1961, 1965; M. T. Whisenant, B.S., 1949, 1965. Mary Sue Tillery, B.S., 1947, 1965; Edith Aliene Barnes, B.S., Bob Jones University, 1967; Peggy Maureen Murphy, B.S., Alabama College, 1964, 1965.
DALE Ozark	W. D. Thomason, B.S., 1931, 1965; James H. Estes, B.S., 1963, 1965; T. G. Hubbard, B.S., M.Ag., 1936, 1965. Ruth Sundberg, B.S., M.S., University of Tennessee, 1941, 1965; Linda F. McDonald, B.S., University of Southern Mississippi, 1967.
DALLAS Selma	L. C. Alsobrook, B.S., 1942, 1965; Alex C. Brown, B.S., Tuskegee Institute; M.S., Indiana University, 1959, 1965; James S. Hines,

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	B.S., 1966; Charles D. Scott, II, B.S., M.Ed., Tuskegee Institute, 1951, 1965.
	Dorothy Hixson, B.S., Alabama College; M.S., University of Tennessee, 1937, 1965; Carolyn L. Hicks, B.S., Tuskegee Institute, 1967; Norma M. McCrary, B.S., University of Southern Mississippi, 1961, 1965.
DeKALB Ft. Payne	F. DeWitt Robinson, B.S., 1949, 1965; C. A. Moore, B.S., 1955, 1965; D. C. Poe, B.S., 1956, 1965; Bob Eugene Spears, B.S., Oklahoma State University; M.S., University of Tennessee, 1964, 1965.
	Mary Louise Walker, B.S., Peabody College, 1954, 1965; Patricia A. Drake, B.S., University of Alabama, 1966; *Janet T. Lakeman, B.S., Huntingdon College, 1963, 1965.
ELMORE Wetumpka	J. E. Morris, B.S., M.S., 1935, 1965; W. E. Davis, B.S., 1959, 1965; L. Shelton Hawsey, B.S., M.Ed., 1965; V. L. Keeble, B.S., 1942, 1965; Roscoe A. Lee, B.S., M.Ed., Tuskegee Institute, 1947, 1965.
	Le Jean Ford, B.S., Texas State University for Women, 1963, 1967; Judith N. Brown, B.S., 1966; Yvonne P. Madison, B.S., Tuskegee Institute, 1966; Hattie Wilson, B.S., Alabama College, 1947, 1965.
ESCAMBIA Brewton	R. J. Martin, B.S., 1946, 1966; Edward M. Knowles, B.S., 1953, 1965; Barry E. Wood, B.S., 1966, 1967.
	Peggy Bracken, B.S., 1963, 1965; Bonnie Rae Daugherty, B.S., University of Southern Mississippi, 1967.
ETOWAH Gadsden	T. L. Sanderson, B.S., M.S., 1943, 1965; H. J. Jackson, B.S., University of Georgia, 1944, 1965; A. D. Jones, B.S., M.A., 1948, 1965.
	Sara L. Thomas, B.S., 1947, 1965; Celeste H. Martin, B.S., 1957, 1965.
FAYETTE Fayette	Albert Pitts, B.S., M.A., 1952, 1965; James Pettus Tucker, B.S., 1961, 1965.
	Annie Mary Hester, B.S., Berry College; M.S., University of Alabama, 1953, 1965; Jean McCracken, B.S., University of Alabama, 1957, 1965.
FRANKLIN Russellville	H. A. Ponder, B.S., 1935, 1965; Ellis Raphord Farrington, B.S., 1964, 1965; H. W. Warren, B.S., 1945, 1965.
	Joyce McNutt, B.S., 1954, 1965; Eleanor R. Coker, B.S., Samford University, 1966.
GENEVA Geneva	R. C. Reynolds, B.S., M.A.Ed., 1954, 1965; Claude N. Nall, B.S., 1967; Ted B. Smith, B.S., 1963, 1965.
	Emily H. Seay, B.S., Alabama College, 1960, 1965; Linda L. Morris, B.S., 1966.
GREENE Eutaw	W. H. Johnson, B.S., 1935, 1965; Frank L. Jackson, B.S., M.Ed., Tuskegee Institute, 1941, 1965; Ben McDonald, B.S., 1959, 1966.
	Faye Bragg, B.S., University of Alabama, 1964, 1967; Evelyn Blackmon, B.S., Alabama A&M College, 1965.
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	Evelyn D. Edwards, B.S., M.S., University of Alabama, 1966; Katie I. Carlton, B.S., Tuskegee Institute, 1950, 1965; Peggy G. Chartrand, B.S., Mississippi State College for Women, 1967.
HENRY Abbeville	R. C. Hartzog, B.S., 1946, 1965; C. L. Barefield, B.S., 1951, 1965; Carl Dennis, B.S., M.A., 1954, 1965; Louis A. Murray, B.S., Alabama A&M College, 1962, 1965.
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JEFFERSON Birmingham	Mrs. Clyde Peck, B.S., 1942, 1965; Beverly A. Parker, B.S., Samford University, 1967.
LAMAR Vernon	C. H. Johns, B.S., 1937, 1965; R. A. Griffin, B.S., M.Ed., M.S., 1960, 1965; Charles E. Smith, B.S., 1966, 1967; William Gaines Smith, B.S., 1965; Percy L. White, B.S., Alabama A&M College, 1949, 1965.
LAUDERDALE Florence	Irby Barrett, B.S., 1933, 1965; Rubye J. Robinson, B.S., Philander Smith College, 1945, 1965; Maryann F. Wilson, B.S., Samford University, 1966; Barbara Williams, B.S., Florence State College, 1961, 1966.
LAWRENCE Moulton	H. H. Lumpkin, B.S., 1950, 1965; C. T. Guthrie, B.S., 1966. Barbara Alawine, B.S., University of Alabama, 1953, 1965; Jo Ann Huffman, B.S., University of Alabama, 1966.
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LIMESTONE Athens	S. P. McClendon, B.S., 1943, 1965; Billy Ray Baswell, B.S., 1966; Sidney H. Bates, B.S., Tuskegee Institute, 1957, 1965; Dean Parris, B.S., M.Ed., 1959, 1965. Ruby Rogers, B.S., Athens College, 1953, 1965; Linda Finney, B.S., Mississippi State College for Women, 1965, 1966; Inez M. Petty, B.S., Alabama A&M College; M.Ed., Tuskegee Institute, 1949, 1965.
LOWNDES Hayneville	R. W. Teague, B.S., 1948, 1965; Wm. J. Alverson, B.S., 1965; Thomas Cooksey, B.S., 1964, 1966; Paul Henry Waddy, B.S., Alabama A&M College, 1964, 1965. Elizabeth Crum, B.S., 1955, 1965; Willie C. Lockhart, B.S., Tuskegee Institute, 1937, 1965; Myrna J. Rhoades, B.S., University of Alabama, 1965.
MACON Tuskegee	F. K. Agee, B.S., 1945, 1965; Robert Burton, B.S., Alabama A&M College, 1962, 1965; Watkins L. Carter, B.S., Mississippi State University, 1967; Patrick A. Waldrop, B.S., 1962, 1965. Emma Jo Lindsey, B.S., 1948, 1965; Athelstine H. Malone, B.S., Alabama A&M College, 1956, 1965; Charlotte Marshall, B.S., Jacksonville State University, 1965, 1966.
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MARION Hamilton	F. M. Jones, B.S., 1935, 1965; Charles S. Foreman, B.S., M.Ed., Tuskegee Institute, 1945, 1965; Cecil Miller, B.S., M.Ag., 1954, 1965; Rudy P. Yates, B.S., 1960.
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MOBILE Mobile	H. B. Price, B.S., 1945, 1965; O. Terrill Gonce, B.S., 1965; I. D. Thornton, B.S., M.S., 1944, 1965.
MONROE Monroeville	Elna Tanner, B.S.; M.S., University of Tennessee, 1950, 1965; ^a Penelope L. Flippo, B.S., University of Alabama, 1962, 1965; Mary Alice Gregg, B.S., 1967; Dorothy Jane Tucker, B.S., Florence State College, 1967.
MONTGOMERY Montgomery	W. L. Martin, B.S., 1942, 1965; R. I. D. Murphy, B.S., M.Ag., 1958, 1965; Franklin H. Wood, B.S., 1963, 1965.
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	Evelyn Graham, B.S., University of Alabama, 1950, 1965; Joyce Richardson, B.S., Judson College, 1958, 1965.
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RUSSELL Phenix City	Wanda E. Prater, B.S., Jacksonville State University, 1965; Barbara K. White, B.S., University of Mississippi, 1966.
SHELBY Columbiana	C. A. Woods, B.S., 1947, 1965; Mack H. Eldridge, B.S., Virginia State College, 1948, 1965; Jerry Lamar Williams, B.S., 1967. Alma Holladay, B.S., M.Ed., 1941, 1965; Elnora Gandy, B.S., Tuskegee Institute, 1952, 1965.
ST. CLAIR Pell City	W. M. Clark, B.S., 1937, 1965; J. E. Jones, B.S., 1958, 1965; W. J. Thompson, B.S., M.S., 1954, 1965. Marian Cotney, B.S., 1939, 1965; Sharon Ann Stephens, B.S., 1967.
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TALLAPOOSA Dadeville	Thomas L. Bass, B.S., M.Ed., 1946, 1966; A. A. Hester, B.S., 1944, 1965; J. B. Mathews, B.S., 1949, 1965; Curtis H. O'Daniel, B.S., 1965, 1966; George A. Peasant, B.S., Tuskegee Institute; M.S., Virginia State College, 1950, 1965. Mary Baughn, B.S., Alabama College, 1951, 1965; Charlotte A. Blakney, B.S., Mississippi State College for Women, 1967; Martha J. Owens, B.S., 1966; Marie H. Player, B.S., Alabama A&M College; M.Ed., Tuskegee Institute, 1957, 1965.
TUSCALOOSA Tuscaloosa	C. H. Webb, B.S., 1957, 1965; Sam D. Carroll, B.S., M.Ed., 1963, 1965; James E. Pinion, B.S., 1966; William L. Royston, 1944, 1965; R. W. Thompson, B.S., M.A.G.Ed., 1958, 1965. Margaret Miller, B.S., 1949, 1965; Iris E. Anderson, B.S., Alabama College, 1965; Annette B. Wallace, B.S., Alabama A&M College, 1966.
WALKER Jasper	B. R. Holstun, B.S., 1934, 1965; James Cooper, B.S., 1948, 1965; B. B. Fields, B.S., Tuskegee Institute; M.S., University of Illinois, 1954, 1965; James C. Howell, B.S., M.A.G.Ed., 1961, 1965; French Sconyers, B.S., 1943, 1965. Elizabeth Stewart, B.S.; M.S., University of Alabama, 1945, 1965; LaVurn Blount Stinson, B.S., Alabama A&M College, 1965; Mrs. O'Neal Massey, B.S.; M.S., University of Alabama, 1952, 1965; Sarah N. Watson, B.S., University of Alabama, 1961, 1965. Robert E. Thornton, B.S., M.A.G., 1954, 1965; Jerry B. Clark, B.S., M.Ed., 1965; W. D. Jones, B.S., M.A.G., 1954, 1965. Jeanette Argo, B.S., Alabama College; M.S., University of Alabama, 1942, 1965; Margaret P. Gray, B.S., Alabama College, 1966; Mary Linda Maughan, B.S., Mississippi State College for Women, 1967.
WASHINGTON Chatom	D. O. Estes, B.S., 1949, 1965; George Clayton Hoomes, B.S., 1963, 1965. Sarah H. Hazen, B.S., 1964, 1965; Mary N. M. Cook, B.S., University of Southern Mississippi, 1967.
WILCOX Camden	Robert C. Farquhar, B.S., M.S., 1949, 1965; W. J. Hardy, B.S., 1954, 1965; William E. Street, 1927, 1965. Margaret Whatley, B.S.; M.S., University of Alabama, 1941, 1965; Sandra Sharman, B.S., University of Alabama, 1965; Solonia E. Reynolds, B.S., Alabama A&M College; M.Ed., Tuskegee Institute, 1949, 1965.
WINSTON Double Springs	W. L. Richardson, B.S., 1935, 1965; J. E. Fields, B.S., 1949, 1965. Madge Pennington, B.S., 1941, 1965.

ENGINEERING EXPERIMENT STATION STAFF

HARRY M. PHILPOTT, A.B., Ph.D., D.D., LL.D., President
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 J. GRADY COX, B.S.Ch.E., M.S., Ph.D., (P.E.), Associate Director
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Aerospace Engineering

PITTS, ROBERT G.	<i>Head of Department (P.E.)</i> , 1935, 1944 B.A.E., Auburn University; M.S., California Institute of Technology.
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CUTCHINS, MALCOLM A.	<i>Associate Professor (P.E.)</i> , 1956, 1962 B.S.C.E., M.S.E.M., Ph.D., Virginia Polytechnic Institute.
DRUMMOD, ALASTAIR M.	<i>Associate Professor</i> , 1967 B.A.Sc., University of British Columbia; D.C.A.E., College of Aeronautics; Cranfield England; M.A.Sc., University of British Columbia; Ph.D., University of Toronto.
HARWELL, KENNETH E.	<i>Associate Professor</i> , 1963 B.S., University of Alabama; M.S., Ph.D., California Institute of Technology.
COCHRAN, JOHN E.	<i>Instructor</i> , 1966, 1967 B.A.E., M.S.A.E., Auburn University.
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Chemical Engineering

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HSU, CHENG-TEH	<i>Professor</i> , 1953, 1962 B.S.C., University of Nanking; M.S., University of Wisconsin; Ph.D., University of Pennsylvania.
TAYLOR, ZELMA L., JR.	<i>Assistant Research Professor</i> , 1962, 1966 B.S.Ch.E., University of Idaho; M.S., Auburn University; Ph.D., University of Florida.

Civil Engineering

SAWYER, DONALD A.	<i>Head of Department (P.E.)</i> , 1965 B.C.E., M.S.E., Ph.D., University of Florida.
BRANSFORD, THOMAS L.	<i>Professor (P.E.)</i> , 1965 B.E., C.E., Vanderbilt University.
POPOVICS, SANDOR	<i>Professor (P.E.)</i> , 1959 Diploma, Polytechnic University, Budapest; Candidate of Tech. Sciences, National Academy of Sciences, Budapest; Ph.D., Purdue University.
KRISTNAMURTHY, N.	<i>Associate Professor</i> , 1967 Intermediate in Science, St. Joseph's College, Bangalore, India; B.Sc., Central College, Bangalore, India; B.E. (Civil) National Institute of Engineering; Mysore, India; M.S. (CE), Ph.D., University of Colorado.
LEICH, GERALD M.	<i>Associate Professor</i> , 1961, 1964 B.C.E., M.S.S.E., Georgia Institute of Technology; Ph.D., Johns Hopkins University.
JUDKINS, JOSEPH F., JR.	<i>Assistant Professor</i> , 1967 B.S.C.E., M.S.S.E., Ph.D., Virginia Polytechnic Institute.
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Electrical Engineering

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HONNELL, MARTIAL A.	<i>Professor (P.E.)</i> , 1958 B.S.E.E., M.S.E.E., E.E., Georgia Institute of Technology.

LOWRY, JAMES L.	<i>Professor (P.E.)</i> , 1955, 1965
B.E., M.E.E., Auburn University; Ph.D., University of Florida.	
PHILLIPS, CHARLES L.	<i>Professor</i> , 1959, 1965
B.E., M.S.E.E., Ph.D., Georgia Institute of Technology.	
CARROLL, CHESTER C.	<i>Associate Professor</i> , 1965
B.S.E.E., M.S.E.E., Ph.D., University of Alabama.	
HICKMAN, CHARLES E.	<i>Associate Professor</i> , 1966
B.S.E.E., M.S.E.E., Ph.D., University of Tennessee.	
FEASTER, WILLIAM M.	<i>Associate Professor</i> , 1956, 1965
B.S.E.E., M.S.E.E., Auburn University.	
NICHOLS, GROVER T.	<i>Associate Professor (P.E.)</i> , 1947, 1950
B.E.E., Auburn University; M.S., Georgia Institute of Technology.	
VENTRICE, CARL A.	<i>Associate Professor</i> , 1966
B.S.E.E., M.S., Ph.D., Pennsylvania State University.	
BRELAND, GORDON W.	<i>Assistant Professor</i> , 1966
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ROGERS, CHARLES L.	<i>Assistant Professor</i> , 1961, 1964
B.E.E., M.S., Auburn University; Ph.D., Duke University.	
BURGE, WALLACE W.	<i>Instructor</i> , 1966, 1967
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B.S., M.S., University of Tennessee.	
CAVIN, RALPH K.	<i>Instructor</i> , 1965, 1967
B.S.E.E., M.S.E.E., Mississippi State University.	
CHENOWETH, DARRELL L.	<i>Instructor</i> , 1963, 1967
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COLE, ROGER W.	<i>Instructor</i> , 1966, 1967
B.A., M.A., University of Florida.	
COLEMAN, ROBERT J.	<i>Instructor</i> , 1964, 1967
B.S.E.E., M.S., Auburn University.	
DWIVEDI, NARENDRA P.	<i>Instructor</i> , 1966, 1967
I.Sc., L. S. College; Muzaffarpur, India; B.Sc., Bihar Institute of Technology, Sindri, India; M.E., Texas A&M University.	
DEFFEBACH, HARRY L.	<i>Instructor</i> , 1963, 1967
B.E., M.S., Auburn University.	
FAUST, WILLIAM E.	<i>Instructor</i> , 1961, 1966
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FORD, FRED A.	<i>Instructor</i> , 1963, 1967
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HOPKINS, WALTER C.	<i>Instructor</i> , 1967
B.S.E.E., University of Alabama.	
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JOHNSON, PIERCE, JR.	<i>Instructor</i> , 1965, 1967
B.S.E.E., M.S.E.E., Georgia Institute of Technology.	
JONES, JAMES W.	<i>Instructor</i> , 1963, 1967
B.E.E., M.S.(EE), Auburn University.	
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SIMS, ROBERT J.	<i>Instructor</i> , 1964, 1967
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Industrial Engineering

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Mechanical Engineering

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B.M.E., B.E.E., Auburn University; M.S., University of Illinois.	
LAWSON, STANTON C. D.	<i>Professor (P.E.)</i> , 1958, 1963
B.S.Sc., University of Toronto; M.S., University of Michigan.	
MAYNOR, HAL W.	<i>Professor (P.E.)</i> , 1959
B.S., M.S., D. of Engineering, University of Kentucky.	
SHAW, WINFRED A.	<i>Professor (P.E.)</i> , 1958
B.S.G.E., University of Mississippi; M.S.E.M., University of Texas; Ph.D., Stanford University.	
SWINSON, WELDON F.	<i>Professor</i> , 1964, 1967
B.A., Rice University; B.S.M.E., Texas Technological College; M.S.M.E., Texas A&M University; Ph.D., University of Illinois.	
VACHON, REGINALD I.	<i>Alumni Professor</i> , 1958, 1967
B.M.E., M.S.N.S., Auburn University; Ph.D., Oklahoma State University.	
DUNN, JERRY R.	<i>Assistant Professor</i> , 1966
B.S.M.E., Lamar State College of Technology; M.S.M.E., Georgia Institute of Technology.	
DYER, DAVID F.	<i>Assistant Professor</i> , 1965
B.S.M.E., University of Tennessee; M.S.M.E., Ph.D., Georgia Institute of Technology.	
HARMON, GRADY R.	<i>Assistant Professor</i> , 1963, 1965
B.E.P., M.S., Auburn University.	
LEPPERT, ALFRED M.	<i>Assistant Professor (P.E.)</i> , 1965
B.M.E., Georgia Institute of Technology; M.S., Stanford University.	
MAPLES, GLENNON	<i>Assistant Professor</i> , 1966
B.S., M.S., Mississippi State University; Ph.D., Oklahoma State University.	
YU, JAMES C. M.	<i>Assistant Professor</i> , 1963, 1967
B.S., National Taiwan University; M.S., Virginia Polytechnic Institute; Ph.D., Auburn University.	
BUSCH, COURTNEY C.	<i>Instructor</i> , 1965
B.S., M.S., Tulane University.	

CHENG, SHUI-CHEH	Instructor, 1966
B.S.M.E., Taiwan Cheng-Kung University; M.S.M.E., Auburn University.	
NIX, HILLARY G.	Instructor, 1964, 1966
B.S.M.E., M.S.M.E., Auburn University.	
RANSON, WILLIAM F., JR.	Instructor, 1967
B.S.M.E., M.S.M.E., Auburn University.	

Textile Engineering

ADAMS, CLEVELAND L.	Head of Department, 1952
B.T.E., Auburn University.	
WATERS, WILLIAM T.	Professor, 1958, 1963
B.S.T.E., Clemson University; M.S., Georgia Institute of Technology.	
FARROW, JAMES C.	Associate Professor (P.E.), 1949, 1965
B.S.T.E., Auburn University.	
HALL, DAVID M.	Associate Professor, 1965
B.T.C., Auburn University; M.S.T.C., Clemson University; Ph.D., Victoria University (England).	
MORTON, GLENN P.	Assistant Professor, 1967
B.S., McMurry College; M.S., Auburn University.	

ENGINEERING EXTENSION SERVICE

HARRY M. PHILPOTT, A.B., Ph.D., D.D., LL.D., President	
FRED R. ROBERTSON, JR., B.S., M.S., Dr.P.A., Vice President for Extension	
FRED H. PUMPHREY, B.A., B.E.E., E.E., D.Sc., (P.E.), Dean, School of Engineering	
JOHN L. CAIN, B.Ch.E., Director	
JAMES F. O'BRIEN, JR., B.M.E., M.M.E., Assistant Director	
WILLIAM B. SANFORD, B.M.E., M.M.E., Director, Birmingham Office	
FRANK VANDERGRIFT, B.M.E., M.A., Director, Cooperative Education	
C. JACK WESTBERRY, B.S.T., M.S., Assistant Director, Cooperative Education	

Aerospace Engineering

DECKER, HAROLD R.	Assistant Professor of Aerospace Engineering, 1965
B.S.Ed., Northeast Missouri State Teachers College; M.Litt., University of Pittsburgh.	
KITELY, GARY W.	Assistant Professor of Aerospace Engineering, 1965
B.S., University of Minnesota; M.S., Purdue University; F.A.A., A & P Certificate Parks College.	

ROBINSON, WALTER J., JR.	Associate Professor of Aerospace Engineering, 1959, 1966
B.S.A.A., Auburn University; M.B.A., University of Denver.	

Civil Engineering

BLAKNEY, WILLIAM G. G.	Associate Professor of Civil Engineering (P.E.), 1958, 1961
B.E., Nova Scotia Technical College; M.Sc., Ohio State University.	
BRANSFORD, THOMAS L.	Professor of Civil Engineering (P.E.), 1965
B.E., C.E., Vanderbilt University.	
LEIGH, GERALD M.	Associate Professor of Civil Engineering, 1961, 1964
B.C.E., M.S.S.E., Georgia Institute of Technology; Ph.D., Johns Hopkins University.	
PETERSON, CHARLES H.	Assistant Professor of Civil Engineering (P.E.), 1962
B.C.E., M.C.E., Auburn University.	
POPOVICS, SANDOR	Professor of Civil Engineering (P.E.), 1959
Diploma, Polytechnic University, Budapest; Candidate of Tech. Science, National Academy of Sciences, Budapest; Ph.D., Purdue University.	
SAWYER, DONALD A.	Head Professor of Civil Engineering, 1965
B.C.E., M.S.E., Ph.D., University of Florida.	

Electrical Engineering

BRELAND, GORDON W.	Assistant Professor of Electrical Engineering, 1957
B.E., Auburn University; M.S.E.E., Ph.D., Georgia Institute of Technology.	
FEASTER, WILLIAM M.	Associate Professor of Electrical Engineering, 1956, 1965
B.S.E.E., M.S.E.E., Auburn University.	

- LOWRY, JAMES LEE..... *Professor of Electrical Engineering*, 1955, 1965
 B.E.E., M.E.E., Auburn University; Ph.D., University of Florida.
- PHILLIPS, CHARLES L..... *Professor of Electrical Engineering*, 1959, 1965
 B.E.E., M.S.E.E., Ph.D., Georgia Institute of Technology.
- VENTRICE, CARL A..... *Associate Professor of Electrical Engineering*, 1956
 B.S.E.E., M.S., Ph.D., Pennsylvania State University.

Industrial Engineering

- LAYFIELD, CLAUDE B..... *Associate Professor of Industrial Engineering*
(P.E.), 1947, 1958
 B.A.A., B.I.M., Auburn University; M.S., Georgia Institute of Technology.
- TRUCKS, LOUIS B..... *Assistant Professor of Industrial Engineering (P.E.)*, 1964
 B.S., Auburn University; M.S., University of Pittsburgh.

Mechanical Engineering

- BENZEL, JAMES F..... *Assistant Professor of Mechanical Engineering*, 1957
 B.Cer.E., Georgia Institute of Technology; M.S., Ph.D., University of Illinois.
- JEMIAN, WARTAN A..... *Professor of Mechanical Engineering (P.E.)*, 1962, 1965
 B.S.Ch., University of Maryland; M.S., Ph.D., Metallurgical Engineering, Renssalaer Polytechnic Institute.
- LEPPERT, ALFRED M..... *Assistant Professor of Mechanical Engineering (P.E.)*, 1965
 B.M.E., Georgia Institute of Technology; M.S., Stanford University.
- VACHON, REGINALD I..... *Alumni Associate Professor of Mechanical Engineering*, 1958, 1963
 B.M.E., M.S.N.S., Auburn University; Ph.D., Oklahoma State University.

Industrial Laboratories

- McMURTRY, THOMAS EDWARD..... *Assistant Professor of Industrial Laboratories*, 1959, 1963
 B.S., M.Ed., Auburn University.

Chemical Engineering

- TAYLOR, ZELMA LOWELL, JR..... *Assistant Research Professor of Chemical Engineering*, 1962, 1966
 B.S.Ch.E., University of Idaho; M.S., Auburn University; Ph.D., University of Florida.

Textile Engineering

- ADAMS, CLEVELAND L..... *Head Professor of Textile Technology*, 1952
 B.T.E., Auburn University.
- FARROW, JAMES C..... *Associate Professor of Textile Engineering (P.E.)*, 1949, 1965
 B.S.T.E., Auburn University.

STATE REGULATORY AND VETERINARY SERVICES**STATE REGULATORY SERVICE****CHEMISTRY**

SAUNDERS, CHARLES RICHARD	<i>State Chemist, 1924, 1950</i>
B.S., M.S., Auburn University; Ph.D., University of Nebraska.	
BIDEZ, ALICE BEASLEY	<i>Secretary, 1934</i>
GUTHERY, MILFORD DALTON	<i>Chief Chemist III, 1966</i>
B.S., M.S., Auburn University.	
RHOADES, REGINA A.	<i>Agricultural Chemist II, 1961, 1967</i>
B.S., Auburn University.	
JORDAN, DARBY	<i>Agricultural Chemist I, 1966</i>
B.S., Auburn University.	
HAYES, MELVIN	<i>Agricultural Chemist I, 1966</i>
B.S., West Virginia University.	
HAYES, ROSE MAE	<i>Agricultural Chemist I, 1967</i>
B.S., Florence State College.	
PRISCILLA P. DAVIDSON	<i>Agricultural Chemist I, 1968</i>
B.S., Auburn University.	
JOHN JINKS	<i>Assistant Agricultural Chemist, 1968</i>
Two years, Auburn University.	

STATE VETERINARY DIAGNOSTIC LABORATORY

(Conducted in cooperation with the Alabama State Department of Agriculture and Industries and the United States Department of Agriculture,
Agricultural Research Service.)

GREENE, JAMES E.	<i>Dean, School of Veterinary Medicine, 1937, 1958</i>
D.V.M., M.S., Auburn University.	
MILLIGAN, JOHN G.	<i>State Veterinarian, 1951</i>
B.S., D.V.M., Auburn University.	
TAYLOR, JULIAN B.	<i>Associate State Veterinarian, 1945</i>
D.V.M., Auburn University.	
ROBERTS, CHARLES S.	<i>In Charge of State Diagnostic Laboratory, 1947, 1958</i>
D.V.M., Auburn University; M.S., Michigan State University.	
HUNTER, KATHRYN	<i>Laboratory Assistant II, State Diagnostic Laboratory, 1959</i>
WORTHY, MARY	<i>Laboratory Assistant II, State Diagnostic Laboratory, 1959</i>
EMRICK, V. R.	<i>U.S. Dept. of Agriculture, Agricultural Research Service, In Charge of Bang's Disease Laboratory, 1949</i>
DAVIDSON, SANDRA	<i>Secretary, State Federal Bang's Disease Laboratory, 1964</i>
JACKSON, DOROTHY B.	<i>Laboratory Assistant II, State Federal Bang's Disease Laboratory, 1964</i>
WILLIAMSON, O. B.	<i>U.S. Dept. of Agriculture, Agricultural Research Service, Biological Laboratory Aide, 1955</i>
WILLIAMSON, RUTH	<i>U.S. Dept. of Agriculture, Agricultural Research Service, Biological Laboratory Aide, 1957</i>
LITTLE, FLETCHER C.	<i>U.S. Dept. of Agriculture, Agricultural Research Service, Biological Laboratory Aide, 1964</i>
LONG, IRL RICHARD, JR.	<i>Bacteriologist, 1966</i>
A.B., Huntington College.	
POOLE, JAMES H.	<i>In Charge of State Branch Veterinary Diagnostic Laboratory, Albertville, Alabama, 1964</i>
D.V.M., Auburn University.	
EDWARDS, SPENCER C.	<i>Bacteriologist, State Branch Veterinary Diagnostic Laboratory, Albertville, Alabama, 1964</i>
B.S., Huntington College.	
MCCREARY, V. D.	<i>In Charge of State Branch Veterinary Diagnostic Laboratory, Elba, Alabama, 1960</i>
D.V.M., Auburn University.	
MOODY, HAROLD M.	<i>Bacteriologist, State Branch Veterinary Diagnostic Laboratory, Elba, Alabama, 1955, 1962</i>
B.S., Troy State University.	

Enrollment Statistics

1982-1983

Enrollment Statistics

1967-1968

Table I.—Enrollment by Classes, Courses and Divisions

FAIR QUARTER, 1967

DIVISION AND COURSE		FALL QUARTER, 1929												Total					
School	Course	Freshmen				Sophomores				Juniors				Seniors				5th Year	
		M	W	M	W	M	W	M	W	M	W	M	W	M	W	M	W	M	W
School of Agriculture																			
Agricultural Science		23	1	33	4	44	4	25	3	8	1	133	13						
Agricultural Business & Economics		12	1	12	11	28	1	8		1	1	44							
Agricultural Engineering		12	1	22	1	69	17	20	8	5	1	82	2						
Biological Sciences		34	9	51	11	20	17	31	8	5	1	190	46						
Forest Management		28		38		17		17		5		104							
Ornamental Horticulture		4	1	7	1	3	2	3		1	1	17	4						
Wood Technology		113	12	164	16	179	24	107	3	15	2	578	8						
TOTAL												807	93						
School of Architecture																			
Architecture		57	9	65	1	45	3	33	30	1	2	231	13						
Building Construction		35	6	64	2	46	1	27	6	2	2	174							
Drama		1	11	1	4	3	5	7		2	5	27							
Fine Arts		17	20	24	1	18	12	18	10	2	2	79	2						
Industrial Design		1	3	13	6	12	4	10		1	1	14	55						
Interior Design		5	6	2	5	2	3	1	4		1	10	19						
Music		24	37	25	27	26	17	19	13	5	3	94	96						
Visual Design		141	89	186	56	147	42	103	40	30	5	612	230						
TOTAL												615	230						
School of Business																			
Business Administration		304	30	452	48	463	40	307	14	9	2	1535	134						
Secretarial Administration		29	29	452	35	463	18	11		9	2	1535	93						
TOTAL		304	59	452	83	463	58	307	25	9	2	1535	227						
School of Chemistry																			
Chemistry		24	14	19	9	11	7	7	2	3	1	64	33						
Chemical Engineering		41	48	2	41	1	26	9	9	3	1	156	1						
Laboratory Technology		6	34	2	2	2	9	33	11	3	1	230	74						
TOTAL		71	48	69	31	54	17	33	11	3	1	37	3						
School of Education																			
Elementary Education		30	223	2	233	6	231	3	170		3	42	14	899					
Health, P.E. & Recreation		45	256	43	23	41	24	39	16	2	1	155	91						
Secondary Education		25		66	288	99	285	67	203	22	49	299	1081						
Voc., Tech. & Prac. Arts Ed.		100	506	139	545	192	541	47	389	20	4	166	6						
TOTAL										47	96	634	2077						

DIVISION AND COURSE	Freshmen		Sophomores		Juniors		Seniors		5th Year		Special and Unclassified		Total	
	M	W	M	W	M	W	M	W	M	W	M	W	M	W
School of Engineering														
Aerospace Engineering.....	65		94	1	64								223	1
Aviation Management.....	59		89		63								211	
Civil Engineering.....	46		64		41								151	
Electrical Engineering.....	99		129		98	1							326	1
Industrial Management.....	39	1	71		96								208	1
Mechanical Engineering.....	62		75		65								202	
Metalurgical Engineering.....	62		75	1									101	4
Pre-Engineering.....	688	6	322										221	6
Pre-Engineering Management.....	76	145	2										221	2
Textile Chemistry.....	26	2	46	1	30	1							108	1
Textile Management.....	868	6	562	3	477	4	3						102	4
TOTAL.....	764	6	101	2	83	2	40						2694	18
School of Home Economics														
Home Economics.....	2	153	153	2	89	12	84	21	61	4	44	6	7	6
TOTAL.....	2	153	153	2	89	12	84	21	61	4	44	6	7	6
School of Pharmacy														
Pharmacy.....	52	22	89	12	84	21	61	4	44	6	1		331	65
TOTAL.....	52	22	89	12	84	21	61	4	44	6	1		331	65
School of Science And Literature														
Applied Physics.....	8	1	10		9		9		8	1	2		36	1
Mathematics.....	31	26	29		25	14	18		5				107	78
Pre-Dentistry.....	22		27		15		15		22				69	1
Pre-Law.....	68	6	81	2	52	4	22		10	2			293	12
Pre-Medicine.....	59	9	38	3	31	2	22		1				138	15
Pre-Veterinary Medicine.....	62	12	45	7	22	1	6				3		132	20
Physics.....	18	15	18	6	17	12	8				3		62	1
Psychology.....	14	32	112	98	125	78	53				3		430	387
Science & Literature.....	108	155	377	144	314	112	160	71	Graduate School	1	13	6	1254	576
TOTAL.....	390	242	377	144	314	112	160	71	Graduate School	1	13	6	1254	576
School of Veterinary Medicine														
Veterinary Medicine.....	95	4	92	6	91	1	91	2	1				370	13
TOTAL.....	95	4	92	6	91	1	91	2	1				370	13
TRANSIENTS														
TOTAL.....	1	1	2										386	15
GRAND TOTAL (Undergraduates).....	1937	1137	2440	990	2111	907	1497	596	165	9	97	117	8247	3766
TOTAL ALL COLLEGE.....													879	345
													9126	4110

Table II—Enrollment of Alabama Students by Counties

FALL QUARTER, 1967

County	Men	Women	Total
Autauga.....	45	23	68
Baldwin.....	116	39	155
Barbour.....	40	44	84
Bibb.....	18	5	23
Blount.....	33	12	45
Bullock.....	25	19	45
Butler.....	50	29	79
Calhoun.....	127	45	172
Chambers.....	164	78	242
Cherokee.....	9	4	13
Chilton.....	39	12	51
Choctaw.....	11	16	27
Clarke.....	40	20	60
Clay.....	44	15	59
Cleburne.....	17	4	21
Coffee.....	68	31	99
Colbert.....	60	20	80
Concubh.....	21	10	31
Coosa.....	36	15	51
Covington.....	81	40	121
Crenshaw.....	34	14	48
Cullman.....	50	14	64
Dale.....	77	23	100
Dallas.....	90	31	121
DeKalb.....	67	37	104
Elmore.....	86	44	130
Escambia.....	64	29	93
Etowah.....	154	92	246
Fayette.....	20	2	22
Franklin.....	13	10	23
Geneva.....	53	18	71
Greene.....	7	4	11
Hale.....	15	13	28
Henry.....	45	14	59
Houston.....	140	43	183
Jackson.....	47	18	65
Jefferson.....	1048	584	1632
Lamar.....	13	3	16
Lauderdale.....	75	23	98
Lawrence.....	21	6	27
Lee.....	1002	421	1423
Limestone.....	43	11	54
Lowndes.....	22	14	36
Macon.....	27	17	44
Madison.....	253	129	382
Marengo.....	28	14	42
Marion.....	25	2	27
Marshall.....	95	50	145
Mobile.....	292	165	457
Monroe.....	30	10	40
Montgomery.....	584	317	901
Morgan.....	102	52	154
Perry.....	19	7	26
Pickens.....	22	8	30
Pike.....	41	10	51
Randolph.....	51	61	112
Russell.....	114	37	151
St. Clair.....	39	14	53
Shelby.....	47	24	71
Sumter.....	20	6	26
Talladega.....	97	62	159
Tallapoosa.....	158	95	253
Tuscaloosa.....	33	11	44
Walker.....	41	23	64
Washington.....	12	9	21
Wilcox.....	21	8	29
Winston.....	17	4	21
TOTAL (ALABAMA).....	6398	3084	9482

Table III—Enrollment of Students by States and Territories
FALL QUARTER, 1967

State	Men	Women	Totals
Arkansas.....	9	1	10
California.....	18	4	22
Colorado.....	4	1	5
Connecticut.....	4	1	5
Delaware.....	2	0	2
District of Columbia.....	5	4	9
Florida.....	561	176	737
Georgia.....	884	412	1296
Muscogee, Ga.....	176	124	300
Hawaii.....	4	1	5
Illinois.....	16	5	21
Indiana.....	11	4	15
Iowa.....	5	0	5
Kansas.....	2	0	2
Kentucky.....	80	15	95
Louisiana.....	62	20	82
Maine.....	1	0	1
Maryland.....	28	12	40
Massachusetts.....	8	0	8
Michigan.....	7	2	9
Minnesota.....	3	0	3
Mississippi.....	121	24	145
Missouri.....	14	5	19
Montana.....	1	0	1
Nevada.....	0	1	1
New Jersey.....	22	6	28
New Mexico.....	4	2	6
New York.....	31	9	40
North Carolina.....	39	15	54
North Dakota.....	1	0	1
Ohio.....	12	2	14
Oklahoma.....	3	3	6
Oregon.....	4	0	4
Pennsylvania.....	23	6	29
Rhode Island.....	1	0	1
South Carolina.....	46	16	62
South Dakota.....	1	1	2
Tennessee.....	288	88	376
Texas.....	25	13	38
Utah.....	2	0	2
Vermont.....	2	0	2
Virginia.....	72	31	103
Washington.....	2	2	4
West Virginia.....	4	0	4
Wisconsin.....	4	0	4
TOTAL—Other States.....	2612	1006	3618
TOTAL—All States.....	9010	4090	13100
 United States Territories			
Puerto Rico.....	2	2	4
TOTALS—U.S. Territories.....	2	2	4

Table IV—Enrollment of Students by Foreign Country

FALL QUARTER, 1967

Foreign Country	Men	Women	Total
Afghanistan.....	1	0	1
Bahamas.....	1	0	1
Canada.....	1	2	3
China.....	34	6	40
Colombia.....	1	0	1
Costa Rica.....	3	0	3
Ecuador.....	1	0	1
Egypt.....	1	0	1
El Salvador.....	1	0	1
Fiji Islands.....	1	0	1
Greece.....	2	0	2
Hong Kong.....	4	4	8
India.....	32	0	32
Indonesia.....	2	1	3
Iran.....	7	0	7
Iraq.....	1	0	1
Israel.....	1	0	1
Japan.....	1	0	1
Jordan.....	2	0	2
Korea.....	3	2	5
Lebanon.....	2	0	2
Malaysia.....	1	0	1
Mexico.....	2	1	3
Nicaragua.....	1	0	1
Pakistan.....	1	0	1
Paraguay.....	4	0	4
Republic of Viet Nam.....	1	0	1
Thailand.....	2	1	3
Turkey.....	1	0	1
TOTALS—Foreign Countries.....	114	18	132
TOTAL STUDENTS ENROLLED Fall Quarter 1967.....	9126	4110	13236

General Summary of Enrollment

SUMMER, FALL, AND WINTER, 1967-68 (as of March 1, 1968)

Correspondence Study Courses.....	831
Clinics, Conferences, Seminars and Short Courses.....	9,963
GRAND TOTAL.....	10,794*

* Combined with the 13,236 students enrolled in regular classes, Auburn University's overall enrollment for the period was 24,030.

GENERAL INDEX

	Page
A	
Academic Eligibility	51
Academic Probation	51
Academic Suspension	51
Clearing Probation	51
Continued Residence	51
Academic Program	10
Academic Regulations	44
Accounting	207
Administration, Supervision and Guidance	171
Administrative Council	5
Administrative and Technical Staff	338
Admissions	18
Advanced Standing Program	21
Auditors	23
Early Admission	20
Freshman Class	20
Graduate Standing	23
Non-Resident Students	18
Pre-College Counseling Program	19
Special Students	23
Standard Admission	20
Transfer Students	21
Transient Students	22
Unclassified Students	23
Aerospace Engineering	129-173
Aerospace Studies (AFROTC)	164-176
Distinguished Graduate	166
Field Training Course	165
Financial Assistance Program	164
General Military Courses	164
Professional Officers Course	165
Uniforms and Equipment	166
Agricultural Business and Economics	59
Agricultural Economics and Rural Sociology	176
Agricultural Education	112, 114, 122
Agricultural Engineering	60, 179
Agricultural Experiment Station Staff	344
Agricultural Science	55
Agronomy and Soils	56, 181
Animal Science	57, 183
Applied Music	75, 264
Applied Physics	93
Architecture	69
Architecture Honors Program	71
Army ROTC Aviation Program	158
Art	73, 114, 188
Arts and Sciences Curriculum Areas	82
Arts and Sciences Departmental Majors	84
Arts and Sciences General Curriculum	83
Assistance Programs Available	32
Associated Women Students	37
Auburn Computer Center	155
Auburn Union	38
Automobile Registration	54
Aviation, Auburn School of	126
Aviation Management	130, 190
B	
Basic Quarterly Charges	29
Biological Sciences	62
Biology	85
Board of Trustees	4
Botany	62
Botany and Plant Pathology	192
Building Construction	75
Building Technology	75, 195
Business	96
Business Administration	96
Business Education	115
C	
Campus and Buildings	12
Campus Leadership and Service Organizations	40
Campus Map	14, 15
Chemical Engineering	101, 196
Chemistry	85, 99, 198
Chemistry Alternate	100
Child Study Laboratories	141
Church Music	79
Civil Engineering	131, 201
Class Enrollment and Attendance	44
D	
Clothing and Textiles	140, 142, 238
Contents for General Information	6
Cooperative Education Program	43
Cooperative Extension Service Staff	353
Cooperative Programs in Mathematics, Physics and Applied Physics	83
Correspondence Study Program	42
Counseling Service	34
Career	35
Educational	34
Learning Enhancement Groups	35
Personal Counseling	34
Cultural, Musical, Theatrical Activities	38
E	
Economics	85, 207
Economics, Geography, and Secretarial Administration	207
Economic Theory and History	208
Education	104
Educational Field Services	107
Electrical Engineering	132, 212
Elementary Education	112, 119, 215
Emeriti	336
Employment	33
Engineering	128
Engineering Experiment Station Staff	363
Engineering Extension Service	126
Engineering Extension Service Staff	363
Engineering Graphics	217
Engineering Liberal Education	124
English	85, 218
English Education	115
Enrollment Statistics	369
Examinations and Reports	50
Experiment Station Properties	13
F	
Faculty and Staff	306
Family Life and Early Childhood Education	140, 142, 239
Fees and Other Charges	30
Finance	208
Financial Aid	32
Fine Arts	73
Foods and Nutrition	140, 143, 240
Food Science	64
Foreign Languages	83, 85, 221
Forest Management	65
Forestry	64, 223
Foundations of Education	111, 226
French	221
Functions of Auburn University	8
G	
General Business	209
General Elective Courses	168
Geography	85, 228
Geology	89, 229
German	352
Grading System	50
Graduate Degrees	153
Graduate Degrees, Arts and Sciences	83
Graduate Work	75
Art	75
Business	96
Education	105
Home Economics	141
Music	81
Veterinary Medicine	152
Graduation Honors	53
Guidance	172

GENERAL INDEX

	Page
H	
Health, Physical Education and Recreation	112, 115, 120, 230
Health Services	35
Higher Education	173, 251
History	85, 234
History of Auburn University	7
Home Economics	237
Home Management and Family Economics	141, 143
Home Management, Housing, and Equipment	242
Housing and Equipment Programs	141, 143
Horticulture	58, 243
Humanistic Social Studies	128
I	
Industrial Arts Education	112, 116, 123
Industrial Design	72, 187
Industrial Engineering	133, 246
Industrial Laboratories	248
In-Service Agricultural Education and Supervision	109
Interdepartmental Education	249
Interior Design	71, 187
Intramural Sports	39
Italian	223
J	
Journalism	85, 252
L	
Laboratory Technology	102, 103, 252
Learning Resources Center	109
Library	13, 253
Living Accommodations	23
M	
Management	209
Marketing	210
Married Students' Housing	28
Mathematics Education	85, 91, 253
Mathematics Education	116
Mechanical Engineering	134, 256
Medical Technology	102
Men Students' Housing	24
Metalurgical Engineering	135
Military Regulations	48
Military Science	156, 261
Military Service Credit	49
Military Training, Basic ROTC	48
Modern Languages Education	116
Music	77, 262
Music Education	81
Music, Professional Curriculum	78
Music Theory and Composition	79
N	
National Honor Societies	40
National Recognition Societies	40
Naval Science	163, 266
Naval Science Department	159
Equipment	163
Qualifications for Enrollment	162
Types of Students	160
Nuclear Science Center	154
O	
Off-Campus Credit	42
Organizations	40
Ornamental Horticulture	67, 243
P	
Personnel Management and Industrial Relations	210
Pharmacy	145, 266
Philosophy	86, 270
Physical Education	47, 112, 115, 120, 230
Physics	86, 92, 271
Political Science	86, 274
Portuguese	223
Poultry Science	58, 276
Pre-Dentistry	87
Pre-Engineering	127, 278
Pre-Law	87
Pre-Medicine	87
R	
Pre-Nursing Science	141, 144
Pre-Pharmacy	145
Pre-Veterinary Medicine	89
Prospective Students	18
Psychology	94
Purposes of Auburn University	7
S	
Schools	
Agriculture	55
Architecture and Fine Arts	69
Arts and Sciences	82
Business	96
Chemistry	99
Education	104
Engineering	124
Graduate School	153
Home Economics	140
Pharmacy	145
Veterinary Medicine	149
School Library Science	117, 251
Science Education	117
Scientific Curricula	89
Secondary Education	112, 120, 280
Secretarial Administration	98, 282
Selective Service Deferment	49, 159, 163
Social Fraternities and Sororities	41
Social Science Education	117
Sociology	86, 283
Spanish	222
Special Education	250
Specialist in Education Program	154
Special Regulations	53
Speech	86, 285
Speech and Hearing Clinic	36
Speech and/or Special Education	118
State Regulatory and Veterinary Services	368
Statistics	211
Student Activities	37
Student Book Stores	36
Student Insurance	37
Student Personnel Services	106
Student Publications	38
Student Services	34
Student Teaching	111
Student Wives Clubs	41
T	
Teacher Certification Services	105
Teacher Preparation	110
Teaching and Program	112
Textile Chemistry	137
Textile Engineering	136, 137, 289
Textile Management	137
Trade and Industrial Education	118, 123
Transfer Students	21
U	
University Placement Service	35
University Regulations	44
V	
Veterans and Dependents Benefits	33
Veterans Educational Benefits	33
Veterinary Medicine	152, 293
Visual Design	74
Vocational Education	114, 122
Vocational Home Economics Education	118
Vocational Rehabilitation Service	109
Vocational, Technical and Practical Arts Education	112, 121, 290
W	
Women Students' Housing	26
Wood Technology	66
Z	
Zoological Sciences	62
Zoology-Entomology	299